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The role of modularisation and unitisation in vocational education and training





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Foreword

Vocational education and training (VET) is being increasingly challenged to adapt better and faster to changes on the labour market, to provide the right skills for employment and to empower learners to respond to these changes. These goals were also reflected in the Bruges communiqué ⁽¹⁾, which called for integration of changing labour market needs into VET provision in the long term and for regular updating of VET content, infrastructure and methods, to keep up with changes in existing occupations and with shifts to new production technologies and work organisation.

Modularisation and unitisation of VET programmes and qualifications is widely seen as part of the answer to this need for flexibility, both in relation to the labour market and in what concerns learners themselves. This paper presents the findings of a study commissioned by the European Centre for the Development of Vocational Training (Cedefop) to investigate the role of modules and units in VET in 15 EU countries. Its aim is to analyse existing patterns of modularisation and unitisation, and determine how unitised and modularised programmes and qualifications fit within and impact on the wider vocational education and training systems.

Findings from the study show that modularisation and unitisation practices are indeed widespread in Europe and have been introduced gradually. They take different forms representing a range of dimensions across a spectrum, with more radical approaches at one end and the traditional concept of vocational education and training at the other, and with most countries combining elements from both models. There are also different module structures and different conceptual understanding of learning building blocks in the 15 countries in the study, reflecting their different historical and cultural backgrounds and varied local needs.

Despite this variety, there are common threads in the rationales for adopting modular and unitised structures. A need to strengthen the links between training and the world of work and to allow education and training provision to respond better to employer and stakeholder demands, emerged as a key theme across the 15 countries. Encouraging mobility in education and training and providing learners with individualised training paths, enabling access and progression

⁽¹⁾ Council of the European Union; European Commission (2010).

(especially for disadvantaged groups), have also been identified as possible drivers for such reforms.

The introduction of modular and unitised structures in VET is also linked with development of credit arrangements based on learning outcomes, and progress made in the recognition and validation of non-formal and informal learning. The development of credit arrangements for transferring and accumulating learning outcomes and in particular the European credit system for VET (ECVET) renews the interest in unitisation practices, which are seen as bedrock for ECVET implementation. However, despite extensive use of modular and unitised structures, their potential to facilitate credit transfer arrangements is yet unfulfilled. More should be done to encourage countries to attach credit value to their modules and units for these developments to have a significant impact on flexibility and mobility within and across different VET systems.

Joachim James Calleja
Director

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The publication takes account of discussions held with country experts, policy-makers, and representatives of social partners from across Europe.

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Executive summary

The issue of modularising vocational education and training (VET) systems has been the subject of debate at European level for some 20 years (Raffe, 1992; Cedefop and Sellin, 1994). Currently, modularisation and unitisation are regarded as one facet of a broader strategy to modernise VET systems. They play a role in addressing current and future challenges resulting from (a) a need to operate flexible education and training systems capable of rapid adjustment to labour market changes and technological advancement, or (b) greater differentiation between learners in terms of performance or prior knowledge, skills and competences.

The data presented in this paper are based on the study *Unitisation and modularisation for flexibility and mobility in VET* commissioned by Cedefop and finalised in 2013 (study report not published, Cedefop, 2013b). Its aims are to provide a state-of-the-art review of modularisation and unitisation practices in initial vocational education and training (IVET) across 15 countries⁽²⁾ in the European Union (EU), analyse the role of these practices, identify existing patterns of modularisation and unitisation, including history, purpose, status, intensity and specific characteristics, and study their impact on the wider vocational education and training systems.

For the purpose of the research, the following definitions have been used:

- (a) modules are components of education and training programmes;
- (b) units are sets of learning outcomes (knowledge, skills and/or competences) that constitute a coherent part of a qualification (Cedefop, 2008b).

A unit can be the smallest part of a qualification that can be assessed, transferred, validated and, possibly, certified (e.g. in relation to ECVET). It can be specific to a single qualification or common to several qualifications. While an attempt has been made to preserve the distinction between units and modules throughout the study, this has not always been possible due to variation in conceptual understanding among participants, who sometimes used the two terms interchangeably. Further, in some countries other terms are used when describing modular structures (Section 1.2).

⁽²⁾ The countries covered in the study are: Austria, Denmark, England, Finland, France, Germany, Hungary, Italy, Latvia, Luxembourg, the Netherlands, Poland, Portugal, Scotland and Slovenia.

Methods

The research was conducted in two stages: country reports and case studies.

Stage 1: 15 country reports (Austria, Denmark, England, Finland, France, Germany, Hungary, Italy, Latvia, Luxembourg, the Netherlands, Poland, Portugal, Scotland and Slovenia)

The first stage involved data collection on, and analysis of modularisation and unitisation through a comprehensive literature review to identify current patterns of usage of modularisation and unitisation approaches to VET qualifications. This was combined with primary data collection via telephone interviews with leading experts in each country, including key decision-makers and practitioners in the field. In total, 35 experts contributed to this stage of the research. The 15 country reports formed the basis for the study's main findings.

Stage 2: Three case study countries (Germany, the Netherlands, Scotland)

Based on the findings from Stage 1, three of the 15 countries were selected to act as case studies for the second phase of the project, so that programme and qualification structure could be explored in greater detail. This involved researchers visiting each of the three countries to develop case studies around six occupational areas, one of which (hairdressing qualifications) is presented in this paper. The three selected countries represent different examples from across the spectrum of modularisation models (Section 3.1), ranging from the traditional, holistic form of training (*Berufskonzept*) in Germany to a combination of different forms in the Netherlands, and to a more radical form of modularisation in Scotland.

Some of the challenges encountered in conducting the study are linked to data availability, in particular in those countries undergoing rapid changes in their VET systems or where reviews of VET provision were taking place at the time of the study.

Study findings

It was found that modularisation provides flexibility for employers to train their workforce in skills that suit their needs, and that it allows qualifications to respond quickly to changes in the world of work, for example in case of technological developments. In some cases, modularisation also gives learners the flexibility to select courses and competences that are of interest to them. It provides greater opportunities for learners to move in and out of the IVET system, as well as some options for recognition of prior learning and progression inside the VET system. It

also makes it easier to tailor courses to different learning groups (e.g. by adjusting duration) and offers more options for collaboration between training providers in terms of delivering combined programmes. The step-by-step certification provided by some forms of modularisation has the potential to reduce dropouts due to regular assessment (for instance, through feedback provided during assessment or by allowing students to see their progress or achievements throughout a course of study).

However, in some countries at least, there are fears that learners will leave the system with only partial qualifications not necessarily needed or recognised on the labour market. There are also concerns that the various groups involved can find flexible structures difficult to understand due to lack of transparency, which points to a need for information and guidance for both learners and employers. Also, provider-led education markets designed around outcomes-based funding can restrict student flexibility and mobility.

While such benefits and concerns were identified by research participants and in much of the literature, limited evidence has been found of actions to evaluate or measure the actual impact of modularisation and unitisation practices. One of the main messages from the study is that more and better research is needed to investigate the impacts of modularisation and unitisation overall and to assess the outcomes of pilot programmes.

Key findings from the study report (Cedefop, 2013b, pp. 8-9) indicate that:

- (a) there is currently widespread use of modularisation and unitisation in VET qualifications in Europe. Indeed, in many ways what has occurred could be described as a 'quiet revolution' in the expansion of modular structures in vocational qualifications;
- (b) modularisation and unitisation have been introduced in four distinct chronological phases: phase I (late 1970s to 1980s); phase II (1990s); phase III (2000s) and phase IV (2010s) (Section 2.1). The 15 countries studied are at different stages in the development of modular qualifications and programmes and this creates an opportunity for learning through knowledge exchange across the EU, between 'early adopters' and 'late developers';
- (c) the gradual introduction of modular and unitised structures is responsive to the perceived needs or demands of employers and stakeholders. The rationale for introducing modular and/or unitised structures is that it allows for easier updating of qualifications to incorporate new technologies or ways of working, by replacing or updating individual modules where needed;
- (d) student choice and individualisation is also a factor in the move towards modularisation and unitisation; however, in none of the countries do students have entirely free choice. Flexibility for learners can be seen in flexible

- programme duration and multiple entry points. In several countries, modularisation was initially targeted at disadvantaged or weaker students;
- (e) other reasons that have contributed to the move towards modularisation and unitisation include a desire to make VET more attractive and raise its status, increase participation rates and reduce early dropout (often targeted at particular groups), create mobility between VET pathways, and make the VET system more transparent;
 - (f) in some countries, devolved structures of governance and bottom-up approaches to decision-making allow enormous scope for providers to plan and implement modular structures of learning. However, top-down approaches to decision-making are most prevalent in the 15 countries studied;
 - (g) the structures of modularisation adopted in the countries are varied and typically respond to local needs. The four main types of modular structures are: mandatory structures; core and electives; specialisation structures; and introductory modules. Some countries have a preference for particular types of module and unit structures, reflecting largely historical and cultural differences;
 - (h) there are different degrees of modularisation and unitisation representing a range of models across a spectrum, with radical forms of modularisation at one end and traditional holistic training (*Berufskonzept*), such as apprenticeships and some school-based approaches, at the other end. Some countries are situated towards the middle of the spectrum and represent a combination of both models;
 - (i) based on data from the case studies, there is little use of credit transfer arrangements between modular and unitised qualifications, despite the extensive use of modular structures. In some countries this can be explained by a lack of systems that attach credit value to individual modules and units. However, in countries that have credit-based modular and unit systems in place, funding can act as a barrier to transfer;
 - (j) few examples were found of practices for recognition of prior learning. This is to be expected given that the study was primarily concerned with IVET systems. Nonetheless, it is apparent that funding regimes may also act as a barrier to the use of recognition of prior learning on entry to IVET programmes;
 - (k) few examples were found of the use of ECVET in the case studies. ECVET is one of the tools to encourage mobility and a relatively new one. However, there is evidence that the infrastructure to support ECVET implementation is beginning to emerge;

- (l) provider-led education markets designed around outcomes-based funding may restrict student flexibility and mobility. A coherent learner-centred funding regime would be better placed to support VET students. This would recognise the essential fluidity and complexity of the systems and, as such, reward providers for successful outcomes in student retention, progression and completion.

Policy messages

Based on the findings of this study, the following policy messages may be outlined:

- (a) adoption of modular and unitised structures for IVET qualifications and programmes should be further encouraged, in line with policy objectives at EU and national levels. This will involve disseminating existing best practices within and across countries. The impetus for this growth in modularisation comes primarily from employers, but student needs and involvement should increasingly be considered;
- (b) it should be recognised and acknowledged that EU Member States have different preferences for the forms of modularisation developed. Some prefer more traditional structures of modularisation, aimed at particular employers and student groups, while others adopt more radical forms in response to multiple stakeholders' diverse needs. All forms should be encouraged;
- (c) more should be done to encourage countries to attach credit value to their existing modular and unit structures. This would make a significant difference in creating flexibility and mobility within and across different IVET systems, and could be achieved by using credits linked to national qualifications frameworks (NQFs);
- (d) EU Member States should be supported in moving from provider-centred to learner-centred systems of IVET. The funding regime for such systems would follow the learner rather than the provider and allow for greater complexity and fluidity in the system;
- (e) there should be no 'dead ends' or 'blind alleys' when it comes to establishing progression routes for IVET students. Those who have successfully completed their IVET qualifications should have the right to progress to related higher education qualifications. Articulation agreements between education providers should be mandatory, with progression pathways built into a student's study programme. This may require cross-institutional cooperation at various levels in the Member States;

- (f) additional information, guidance and support systems for learners and employers are required to understand and navigate modular-based qualifications systems better;
- (g) more research should be conducted to measure the impacts of modularisation and unitisation practices.

CHAPTER 1.

Introduction

Modularisation of vocational education and training (VET) systems has been the subject of debate in Europe in the past 20 years (Raffe, 1992; Cedefop and Sellin, 1994). The move towards modularisation and unitisation is currently regarded as part of a broader strategy to modernise VET systems. More flexible education and training systems are needed to address the challenges of today's society, such as the changes in the labour market and rapid technological advancement. The differences in learners' performance or level of prior knowledge, skills and competences also require a degree of flexibility in education and training systems; students need to be provided with opportunities to fill gaps in their knowledge, for instance by attending extra modules addressing a specific issue, or to be allowed to progress more smoothly through a course of study if they already have certain skills that they have gained elsewhere.

The findings presented in this paper are based on the study *Unitisation and modularisation for flexibility and mobility in VET* commissioned by Cedefop and finalised in 2013 (study report not published, see Cedefop, 2013b). The study provides a review of modularisation and unitisation practices in initial vocational education and training (IVET) across 15 countries in the European Union (EU), and attempts to analyse the role of these practices in VET systems.

Chapter 1 discusses the scope of the study and the methodological approach, as well as the definitions and terminology used in the research. Chapter 2 gives a descriptive account of past and current trends in the development of modularisation and unitisation practices in VET, presents the key actors and decision-making processes involved and gives the rationale for introducing modular and unitised structures in the 15 countries covered in the study. Chapter 3 provides a comparative analysis of the different forms and structures of modularisation and unitisation and a brief look at their impacts, and explores the links between unitisation and the implementation of ECVET. Chapter 4 offers a close-up picture of three different approaches to modularisation and unitisation by exploring in detail qualifications in one occupational area in Germany, the Netherlands and Scotland. Finally, the conclusions and policy messages from the study can be found in Chapter 5.

1.1. Study scope and methodology

The central focus of the study is on modularisation and unitisation practices in IVET in 15 EU countries. In particular, the study provides an analysis of the existing patterns of modularisation and unitisation in these countries, including their history, purpose, status, intensity and specific characteristics, and aims to determine how modular and unitised programmes and qualifications impact on the wider VET systems.

The research was conducted in two stages: country reports and case studies.

1.1.1. Stage 1 – Country reports

The first stage involved data collection on, and analysis of modularisation and unitisation through a comprehensive review of literature combined with telephone interviews with key experts in each country. This resulted in 15 country reports which formed the basis of the findings presented in Chapters 2 and 3 of this paper. Modularisation and unitisation were treated as separate but related concepts and understood in terms of programmes and qualifications (for a discussion on definitions and terminology, see Section 1.2).

The selection of the 15 countries was initially based on the identification of ‘ideal types’ (Rasmussen, 1998, pp. 40-45; Pilz, 2002a; 2005) and included small and large countries from across Europe that represented different VET systems, traditions and cultures. The countries are listed in Table 1.

Table 1. **Countries covered in this report**

AT	Austria	DE	Germany	NL	Netherlands
DK	Denmark	HU	Hungary	PL	Poland
EN	England	IT	Italy	PT	Portugal
FI	Finland	LV	Latvia	SC	Scotland
FR	France	LU	Luxembourg	SL	Slovenia

The methodology included both secondary and primary data collection. Secondary data collection involved analysing existing literature and documentation in each country to identify current patterns of modularisation and unitisation approaches to VET qualifications. This included source documents in the language of the particular country and broader texts that have contributed to EU or other supranational organisational studies. Examples of literature included academic literature pertaining to the modularisation of VET, Cedefop monographs relating to VET systems in the participating countries, descriptions of national education systems provided in the Eurydice database, thematic

overviews and/or educational policy analyses provided by the OECD and government and policy documents from the participating countries. The search period concentrated on information available from 2002 onwards.

Primary data were collected via telephone interviews with experts from each country (including key decision-makers and academics in the field). The selection of the contacted experts was based on both existing networks and on speculative contacts with experts/organisations identified during the course of the literature searches. In total, 35 experts contributed to this stage of the research. The data collected from interviews were then analysed to identify and compare current patterns of modularisation and unitisation approaches in qualifications, and to identify three countries to serve as a basis for further, more in-depth study.

Some of the challenges encountered in conducting the study were linked to the availability of data, in particular in those countries undergoing rapid changes in their VET systems, or where reviews of VET provision were taking place at the time of the study. In these cases, experts were sometimes unable to provide definitive answers as to what the results of reforms might be. Also, the country data on modularisation and unitisation reflect the different stages of development for each country. Due to the differing nature of modularisation and unitisation in each country, the focus of the analysis varies on a country-by-country basis.

1.1.2. Stage 2 – Case studies

Based on the findings from Stage 1, three of the 15 countries (Germany, the Netherlands and Scotland) were selected to act as case studies for the second phase of the project, to enable the structure of programmes and qualifications to be explored in greater detail. This involved researchers visiting each of the three countries to develop case studies around six occupational areas: automotive, butchery, financial services, hairdressing, retail, and warehousing and logistics. Of these, the hairdressing qualifications are presented in Chapter 4.

The three selected countries represent different examples from across the spectrum of modularisation models identified in Stage 1, ranging from the traditional, holistic form of training (*Berufskonzept*) in Germany to a combination of different forms in the Netherlands and to the more radical form of modularisation present in Scotland (Section 3.1). These three countries also have a history of modularisation practices and it was thus possible to access additional data on impact and evaluation via documents and experts.

Two interviews were conducted for each occupation in each country: one with a social partner and one with a practitioner. This enabled researchers to investigate both high-level perspectives on the qualifications and the views of those working on the ground. Contextual, overarching interviews were also

conducted to obtain a more detailed view of modularisation in that country. In total, 48 interviews were conducted in Germany, the Netherlands and Scotland.

Interview data from the three countries were analysed alongside collected documentation pertaining to the programmes and qualifications. Data were analysed both on a country and a cross-country basis, identifying patterns, similarities and contrasts between qualifications and programme structures in the three countries. In the interviews, some of the differences between policy document claims on modularisation and what actually happens in practice were also explored. Given that the case study interviews relate to the particular contexts in which practitioners and social partners were working, the qualifications under consideration present a 'snapshot' view and should not be considered representative.

1.2. Definitions and use of terminology

In this section, we outline the definitions used in the study and describe how such definitions and terminology have been made operational in the research.

1.2.1. Definitions

Generally speaking, the study uses definitions from Cedefop and the EU, although at times particular terms from specific EU countries were used, when local definitions seemed more appropriate.

It is important to state at the outset what is meant by formal qualifications given the importance attached to the principles of transparency and mobility within the European qualifications framework (EQF) and ECVET. A formal qualification is defined as follows: 'the formal outcome [...] of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards and/or possesses the necessary competence to do a job in a specific area of work. A qualification confers official recognition of the value of learning outcomes in the labour market and in education and training. A qualification can be a legal entitlement to practise a trade' (Cedefop, 2008b, p. 144).

Partial qualifications can be defined as follows: 'partial or component qualifications can either be seen as building blocks (modules or units) to be combined into a full qualification or can be used for renewal or specialisation purposes' (Cedefop, 2012b, p. 16).

In IVET, partial qualifications are rarely used. They become much more significant in CVET for continuing professional development purposes and/or the renewal of skill sets.

Qualifications are different from education and training programmes, the latter being ‘an inventory of activities, content and/or methods implemented to achieve education or training objectives [...], organised in a logical sequence over a specified period of time’ (Cedefop, 2008b, p. 142).

The difference in definition between the curriculum and education and training programmes should also be noted. The term curriculum refers to the design, organisation and planning of learning activities, while the term programme refers to the implementation of these activities. It is the latter that concerns us here.

Cedefop’s definitions of modules and units (Cedefop, 2008b, p. 193) need to be contextualised within these broader definitions.

Modules are components of education and training programmes.

Units are a set of learning outcomes (knowledge, skills and/or competences) which constitute a coherent part of a qualification.

A unit can be the smallest part of a qualification that can be assessed, transferred, validated and, possibly, certified (such as in relation to ECVET). A unit can be specific to a single qualification or common to several qualifications. Separate from the definitions of modules and units are those relating to modularisation and unitisation. The criteria used to define these are presented in the explanatory framework outlined in Section 3.1.

A credit system is defined as follows: ‘an instrument designed to enable an accumulation of learning outcomes gained in formal, non-formal and/or informal settings and to facilitate their transfer from one setting to another for validation and recognition. A credit system can be designed: by describing an education or training programme and attaching points (credits) to its components (modules, courses, placements, dissertation work, etc.); or by describing a qualification using learning outcomes units and attaching credit points to every unit’ (Cedefop, 2008b, p. 53).

Mobility is defined here as ‘the ability of an individual to move and adapt to a new occupational environment’ (Cedefop, 2008b, p. 129). The definition of flexibility is somewhat more difficult. In the context of modules and units, flexibility could be interpreted as responsiveness to occupational changes (external flexibility) or as providing learner choice through the structure of a qualification (internal flexibility). The notion of flexibility can be problematic. For instance, a truly flexible modular structure could be seen by some writers as undermining the integration of qualifications. However, for the purposes of this study flexibility will refer to both the notion of responsiveness to change and the range of choices exercised by learners in modular programmes and unitised qualifications.

1.2.2. Understanding and use of terminology

While the research team applied the distinction made in Cedefop definitions between modules as ‘components of education and training programmes’ and units as ‘a set of learning outcomes (knowledge, skills and/or competences) which constitute a coherent part of a qualification’, in practice few participants differentiated between the two concepts. Instead, many participants, including both social partners and practitioners in the case studies, used the two terms interchangeably. Therefore, while an attempt has been made to preserve the distinction between units and modules throughout the course of the study, this has not always been possible due to the variation in conceptual understanding among participants and in the implementation of these concepts in different national contexts. Nonetheless, the study accounts for both dimensions.

Further, the use of terminology in relation to modules and units varies greatly across the 15 countries. Apart from the terms modules and units, other terms describing modular structures are used in some EU Member States, particularly those with a long history of modularisation and unitisation provision. While some countries simply refer to modules, others use the term unit, some countries use both modules and units, and others use building blocks or other specific terms.

The focus of this study is on IVET, which in most of the 15 countries is available to young people aged 15 or 16 and generally lasts three to four years. Some countries make no distinction between IVET and CVET (e.g. Hungary); however, in most cases IVET is available at the upper secondary stage of school and takes place in a school setting or through an apprenticeship system. The English and Scottish systems are an exception to this – in these countries IVET is mostly provided in colleges of further education.

Table 2 provides a breakdown of the terminology used across the 15 countries, as well as an overview of the types of IVET available and the extent of modularisation in these systems.

Table 2. An overview of the use of modules and units in the 15 countries

Country	Terms used	Types of IVET available	Extent of modularisation
AU	Building blocks	Apprenticeships under the dual system are the most popular, but vocational training schools (<i>Berufsbildende mittlere und höhere Schulen</i> or BMHSs) are also available.	Only apprenticeships under the dual system are currently modularised, and within this only a small percentage of training occupations.
DK	Learning activities, competences to be achieved	Alternance of 'sandwich'-based training (<i>erhvervsuddannelse</i> or EUD) accounts for most IVET students and is entered via school or employment.	Modularisation is applied to the initial school-based, one-year basic course in the commercial and technical training programmes (<i>EUD</i>); the three-year main course which follows is not modularised and follows a more traditional apprenticeship model.
England	Units and modules	Strong tracked system. Most IVET is provided by the further education colleges. Little school-based IVET. Growth in work-based training in the form of apprenticeship schemes.	The entire IVET system is modularised. All IVET group awards are composed of units and qualifications.
FI	Study units and modules	IVET is delivered mainly in vocational schools. Apprenticeships are also available.	The entire IVET system is modularised.
FR	Certification units (<i>unités de certification</i>), training units (<i>unités de formation</i>) and modules	IVET is available in full-time vocational schools or more rarely through apprenticeships (alternance mode).	Modularisation is applied to a small proportion of the IVET system; a few of the undergraduate technician certificate (<i>brevet de technicien supérieur</i> or BTS) are modularised. More widely, it is possible to speak of modularisation of the diplomas but not of the learning process, which is organised in a strongly linear way.
DE	Training building blocks (<i>Ausbildungsbausteine</i>) Electives	Most VET students enter the dual system; full-time training in vocational schools is less common. Under the dual system, learners alternate between periods of learning with the training company and with the vocational school.	Modularisation applies to only a small proportion of the IVET system. Most training occupations still follow the traditional apprenticeship model. Elsewhere, modularisation has been introduced in specific parts of the system, for example pilot schemes.
HU	Modules	Both vocational schools and the apprenticeship system offer IVET. Vocational training is available from age 14.	All school-based IVET is modularised. Partial qualifications are also available.
IT	Modules	The most common form of IVET is that provided by full-time vocational schools; apprenticeships are also available. Organisation of training is devolved largely to the regions.	Modularisation is applied to higher technical education and training (<i>Istruzione e formazione tecnica superiore</i> or IFTS) courses, which relate to a range of sectors, and are available in the province of Pesaro and Urbino.
LV	N/A	IVET takes place in vocational schools (vocational basic education and vocational education), which includes practical in-company training. It is available at both lower and upper secondary level.	Modularisation is not applied to any part of the IVET system as yet. However, plans are in place for the introduction of a modular system.

Country	Terms used	Types of IVET available	Extent of modularisation
LU	Building blocks comprised of modules	A hybrid of vocational schools training and a dual system in which vocational school training alternates with work-related training with employers.	Over 100 courses have been modularised and have a competence orientation. They include basic vocational courses leading to the vocational capability certificate (<i>Berufsbefähigungszeugnis/certificat de capacité professionnelle</i> or CCP) and initial vocational training courses leading to the vocational aptitude diploma (<i>Beruflicher Eignungsnachweis/diplôme d'aptitude professionnelle</i> , or DAP), and the technician diploma (<i>Techniker-diplom/diplôme de technicien</i> or DT) (De Carolis, 2010, p. 5 et seq.; Euler and Frank, 2011).
NL	Core tasks (<i>kerntaken</i>), broken down into work processes, and with competences embedded within	There are two main pathways for IVET and learners may move between these. They can choose either the two-, three- or four-year vocational secondary education (<i>beroepsopleidende leerweg</i> or BOL) or a two-, three- or four-year apprenticeship under the 'dual' system (<i>beroepsbegeleidende leerweg</i> or BBL).	Modularisation affects the entire vocational training sector. Qualifications are made up of compulsory core tasks.
PL	Modular curricular packages, broken into modular units	IVET is available from age 16 and is offered either in vocational schools (the most popular is the four-year secondary vocational school, <i>technika</i>) or through apprenticeships.	Shift to decentralised and modularised system in recent years.
PT	Modules and short training units (<i>unidades de formação de curta duração</i> or UFCD)	IVET is provided by secondary schools, vocational schools and apprenticeships.	It has been compulsory for all school-based vocational programmes to be modular since 2008/09.
Scotland	Units and modules	Prevocational courses are available for 14-16 year-olds in a few institutions. IVET at upper secondary level is predominantly available in further education colleges, and to a lesser extent via modern apprenticeships.	The entire IVET system is modularised and unitised. IVET group awards are composed of individually certified credit-based units.
SI	Modules in IVET programmes, units in relation to the national vocational qualifications system	Most IVET is school-based, with a work-based component depending on the type of programmes. It is delivered primarily in vocational and technical schools.	There has been recent reform to modularise the IVET system and make it more flexible, adapting curricula to gear them more to learning outcomes and the labour market (Cedefop ReferNet Slovenia, 2010).

Source: Cedefop. (2013b).

CHAPTER 2.

Setting the scene

2.1. Development of modularisation and unitisation practices over time

All the countries covered in this study have already implemented or are planning to implement modularisation and/or unitisation in at least part of their VET systems. This section gives an overview of the extent of modularised/unitised provision in the 15 countries, along with a chronological outline of these developments.

Innovation processes in an education and training system can be more or less ‘radical’ in breaking with existing procedures and standards. Some countries have applied modularisation and unitisation to all aspects of initial vocational education and training (IVET) provision, while others have taken a more cautious ‘evolutionary’ approach, where only specific qualifications or aspects of qualifications in the IVET system are modular or unitised. It is also possible to envisage a third ‘parallel’ approach that enables traditional structures to exist alongside new arrangements (see also Pilz, 1999, pp. 240-288). Figure 1 illustrates where the 15 countries might be placed in terms of the extent to which their qualifications have adopted modular or unitised approaches.

Figure 1. The extent of modularisation and unitisation across all 15 countries



Source: Cedefop (2013b).

Modular and unitised IVET qualification structures have been introduced gradually across the European Union (EU) over the course of the past decades. Some countries have had a system of modularisation in place since the late 1970s, while others are still in the process of developing one. Four distinct chronological phases can be identified:

- phase I (late 1970s and 1980s): France, the Netherlands, Scotland and England;

- phase II (1990s): Poland, Germany, Denmark, Finland, Italy and Slovenia;
- phase III (2000s): Austria, Hungary, Portugal and Luxembourg;
- phase IV (2010s): Latvia.

Further details are provided in Figure 2.

2.1.1. Phase I: France, the Netherlands, Scotland and England

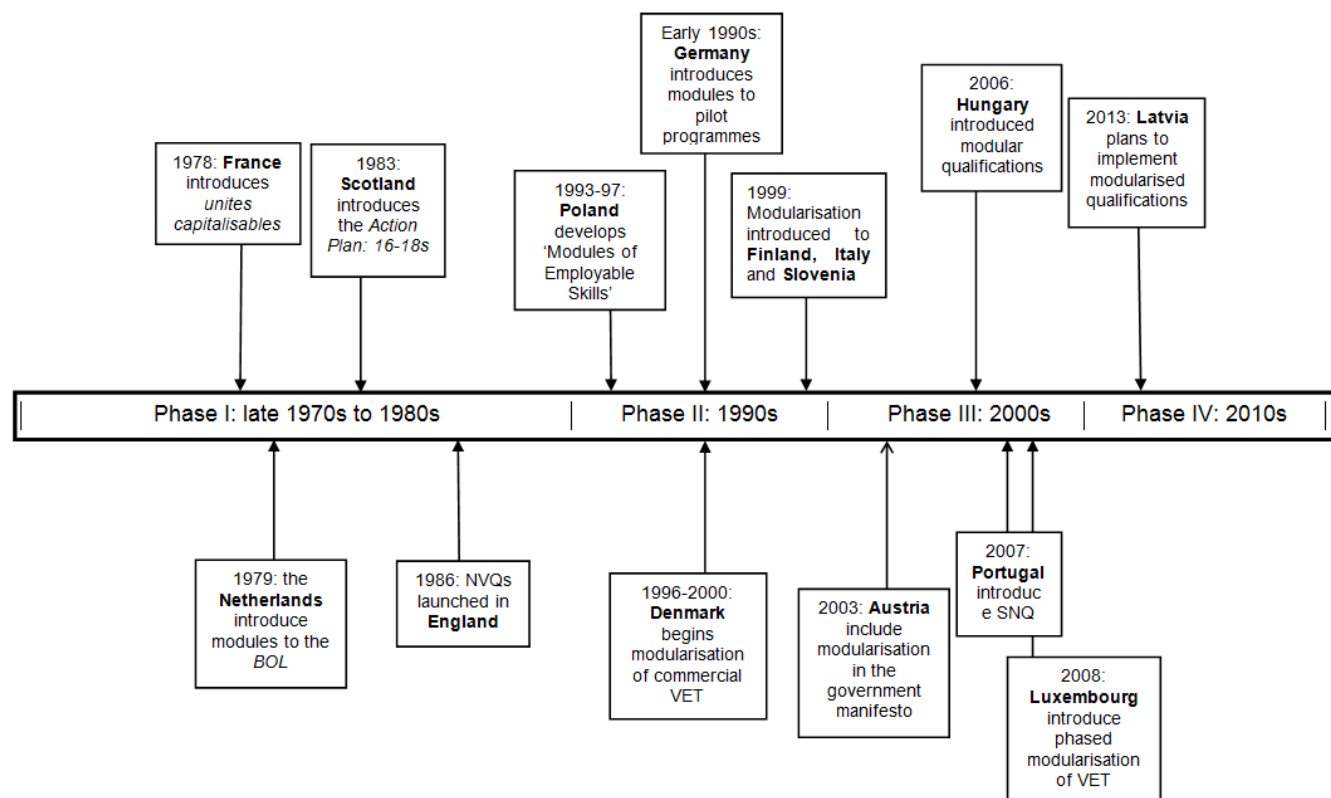
France, the Netherlands, Scotland and England were early adopters of modularisation and unitisation. The origins of modular and unitised IVET qualifications in these countries can be traced back to the late 1970s/early 1980s. Among them, only France has not implemented modularisation across the entire IVET system. However, all still have some reform under way – both the Netherlands and Scotland are introducing new qualifications, while England is also currently revising some of its vocational education and training (VET) provision. The implementation of modularisation and unitisation can thus be seen as a continually evolving process.

In France, the first step towards modularisation of vocational training was taken in 1978 with the introduction of capitalisable units (*unités capitalisables* or UCs). The main qualifications to fall under this framework of modularised vocational awards are the ISCED level 2 awards – the professional aptitude certificate (*certificat d'aptitude professionnel* or CAP) and the vocational education certificate (*brevet d'études professionnelles* or BEP) and the ISCED level 4 undergraduate technician certificate (*brevet de technicien supérieur*, or BTS) (Académie de Toulouse, 2002, p. 1). Flexibility and individualisation in French vocational training received a further boost in 1989, when the individual training credit (*Crédit formation individualisé* or CFI) was introduced. This combined modules and integrated periods of practical training, aimed primarily at unemployed young people with no formal school-leaving qualifications. More recently, new elements in the form of training units (*unités de formation*), modules and certification units (*unités de certification*) have been introduced.

The French legal documents ⁽³⁾ that exist for every vocational qualification, describing its characteristics, are clustered in different 'units', which may create the impression of a modularised system. However, units and modules are not individually certificated, part qualifications are generally not recognised in the

⁽³⁾ The French system has several 'reference frameworks' or 'standards' (*référentiels*) including the reference framework for occupational activities (*référentiel d'activités professionnelles*), the training reference framework (*référentiel de formation*) and the certification reference framework (*référentiel de certification*) which are mentioned in this paper.

Figure 2. Modularisation and unitisation timeline



Source: Cedefop (2013b).

labour market and the students are not free in respect of the combination of the different units or their sequential arrangement (Malicot, 2008, p. 8). The aim is always for learners to work towards the full State-recognised award. Only specific parts of the BTS diplomas (just one of a range of IVET qualifications available in France) are fully modularised.

Modularisation in the Netherlands has a similarly long history, but here it has affected the IVET system to a far greater extent, taking place gradually in the two main strands of IVET – the BOL (two-, three- or four-year vocational secondary education) and the dual system. Work on modularising the BOL began in 1979. The two-year BOL strand was the first to be offered in modular form as a pilot project. Significant initiatives to reform the Dutch VET system took place in the 1980s and 1990s. In 1993 the rest of the BOL was modularised and course organisation, course content and learning outcomes were revised to enable short discrete course units to be certified separately. Some of the greatest changes to the VET system came in 2004, when a competence-based framework was introduced (Biemans et al., 2004). More recently, ‘modules’ have been replaced by core tasks (*kerntaken*), work processes and associated competences.

In Scotland, modular and unitised qualification structures are well established and have been applied to the whole IVET system for many years. The ‘action plan: 16-18s’ in 1983 paved the way; subsequent legislation extended the use of units to a range of qualifications including higher national certificates, higher national diplomas and professional development awards. The introduction of Scottish vocational qualifications (SVQs) in 1989 continued this trend towards unitisation, and Scotland developed one of the first national qualifications frameworks (NQFs) – the Scottish credit and qualifications framework (SCQF) (Cedefop, 2012a). It is reasonable to claim that Scotland has one of the most comprehensive ‘unitised’ systems of IVET in Europe.

Scotland’s qualification structure is currently being radically changed as a result of the curriculum for excellence (Scottish Executive, 2004), which aims to restructure the school curriculum to ensure students are able to have a more individualised programme of studies that promotes inter-disciplinary learning, vocational skills and health and well-being. It is also anticipated that new qualifications in the ‘senior phase’ of schooling (age 16 to 18) will adopt the design principles of unitisation, in particular the assessment of learning outcomes and credit accumulation associated with the SCQF.

Unitisation has also long been a feature of the English IVET system (FEDA, 1995), and has more recently been strengthened within a statutory framework

and through the introduction of the qualifications and credit framework (QCF) ⁽⁴⁾ (Gunning and Raffe, 2012). It was a central feature of the (recently withdrawn) work-related and competence-based national vocational qualifications (NVQs) which were introduced in 1986, and it now forms the core of most IVET qualifications in England (Raggatt and Williams, 1999). With the introduction of vocationally oriented qualifications in the upper secondary school (known as Key Stage 4) in the late 1990s, a range of vocationally oriented awards also appeared that combined with academic qualifications to form a mixed-mode curriculum. In 2012 the British government announced its intention to move away from a modular structure towards a focus on end-of-course exams.

2.1.2. Phase II: Poland, Germany, Denmark, Finland, Italy and Slovenia

There was a cluster of activity in introducing modularised and unitised qualifications systems in the mid to late 1990s in Poland, Germany, Denmark, Finland, Italy and Slovenia.

Modularisation has been a feature of Polish IVET since the mid-1990s and although it is currently applied only to part of the IVET system, there are plans to extend this to the whole system. Under the auspices of the Ministry of Labour and Social Policy, a World Bank-funded project introduced 'Modules of employable skills' and developed 1 000 modular units for 21 occupations (1993-97). Between 1995 and 1997, the Improve programme (Implementation of modernised programmes for vocational education) supported vocational schools in developing modular programmes and introduced prevocational skills modules into general education (Eurydice, 2010). Between 2004 and 2008 the focus was on modular curricular packages intended to assist and support teachers in developing teaching materials, lesson plans and assignments (Cedefop ReferNet Poland, 2010a). In 2009, the Ministry of National Education began a project funded by the European Social Fund (ESF) to produce examples of best practice in the use of modular curricula.

In Finland, all IVET qualifications are modular and unitised in approach. The concept of flexibility was introduced to upper secondary curricula in 1993-94. Key reforms followed later in the 1990s, at a time when VET was becoming increasingly decentralised. The key pieces of legislation are the Vocational Education and Training Act (Law 630/1998) and Decree (811/1998). As part of these reforms, the structure of VET was simplified and the number of

⁽⁴⁾ A consultation was published in 2014 in England to withdraw the QCF rules: <https://www.gov.uk/government/consultations/after-the-qcf-a-new-qualifications-framework> [accessed 3.9.2015].

qualifications was reduced (OECD, 1999). The current modularised structure of three years and 120 credits was introduced to the school-based qualification in 1999, and IVET take-up increased in the 2000s (Cedefop ReferNet Finland, 2011). Study units denote the parts which make up a vocational qualification and are made up of learning outcomes which relate to skills, knowledge and competence (Stenström and Leino, 2009).

Modularisation has been used in Danish labour market training programmes since the 1970s (Schreier et al., 2010a). It reached IVET with a series of legislative reforms beginning in 1996, which introduced competence-based curricula to commercial VET programmes. Later, what is known as the Reform 2000 extended this to all IVET programmes (Cort, 2011), introduced a modularised structure to technical VET programmes and consolidated the number of basic course entry routes. Legislation in 2006 was intended to allow further freedom of choice, enabling students to combine, or 'pick and mix', modules, and to undertake additional, higher-level modules allowing them to progress on to higher education. In 2007 learning outcomes were introduced to the system (Cort, 2011), partial qualifications were expanded (Cedefop ReferNet Denmark, 2010) and new, more structured courses were introduced for weaker students (Schreier et al., 2010a).

While the initial basic courses of all IVET qualifications in Denmark are now fully modularised (with a modular structure applied as both an organisational and pedagogical principle (Schreier et al., 2010a), the main courses that follow (work-based) remain non-modularised.

In Germany, modularisation has been introduced gradually to cover training in specific occupational areas and currently applies to only a proportion of VET provision. It has been under discussion since the 1990s, but its introduction has been hampered by concerns expressed by both employers and unions (Pütz, 1997). Elective programmes were first introduced to the normal dual system in 1998 with the reorganisation of the 'digital media design and print media' occupation. Electives allow the training company to adjust various skills to their own needs (Rulands, 2009, p. 40), while ensuring a minimum level of comparability and consistency in the training. The training building blocks (*Ausbildungsbausteine*), introduced in 2008 and instigated as part of the Jobstarter Connect pilot scheme, run in 14 selected training occupations. The aim is to ensure that training offered in different locations can be joined up more effectively by means of accreditation of discrete elements and documentation of the training blocks already successfully completed (Frank and Grunwald, 2008; Frank and Hensge, 2007). Pilot schemes have been limited regionally, to a few specific occupations, and are intended to be reversible.

In Italy, where organisation of vocational training is largely devolved to the regions, modularisation has been introduced in only one area of the VET system – the higher technical education and training courses (*istruzione e formazione tecnica superiore* or IFTS) in the province of Pesaro and Urbino, in the Marche region (Symela et al., 2007). The IFTS courses, the skills training programmes, were approved by statute in 1999. Kretschmer notes that ‘After the decree [of] 25 January 2008, the National Committee on IFTS agreed to update the standards to make them more coherent with the learning outcomes approach’ (Kretschmer, n.d., p. 33).

In 1999 Slovenia adopted the national guidelines for VET that provided for the modularisation of the VET system. The aim was to make an appropriate module available for each vocational skill on which a course of training is based (Svetlik, 2004, p. 43). Some difficulties were encountered during this process of restructuring VET, such as the lack of experience of, and the resultant lack of knowledge related to, modularisation and non-subject-based curricula (Svetlik, 2004, p. 44). Hence a development programme was devised by the Ministry of Education, Culture, Science and Sport to provide guidelines for implementing the reforms. By late 2003 the first two redesigned training programmes were ready to be submitted to the National Council (Svetlik, 2004, p. 44). All programmes of vocational education and training were modularised by 2008.

2.1.3. Phase III: Austria, Hungary, Portugal and Luxembourg

Austria, Hungary, Portugal and Luxembourg began to introduce modularisation in the mid-2000s.

Austria, like Germany, introduced modularisation gradually, to cover training in specific occupational areas. The extent of modularisation in the dual system as a whole is extremely limited – only apprenticeships under the dual system are currently modularised. Initial steps towards a substantial restructuring of training occupations were taken in 1997, when training occupations were divided into ‘specialist’ and ‘cluster’ occupations (*Schwerpunktberufe* and *Gruppenlehrberufe*). Under this model, a number of occupations share an initial common training core, with specialisation following at a later stage. The first explicit reference to conceptualising the modular system dates back to February 2003, when it was included in the government’s manifesto. Modularisation, along with the restructuring of curricula into modules, was then put on a statutory footing in 2006, when Section 8(4) of Austria’s vocational training legislation ⁽⁵⁾ was amended. A

⁽⁵⁾ Austrian legislation: BAG, *Vocational Training Act*. (Österreichische gesetzte: BAG, *Berufsausbildungsgesetz*):

further major step towards a 'building block' system was then taken in 2008, when modularisation was introduced (Archan and Wallner, 2007, p. 4) following complex political negotiations to resolve organisational and funding issues in particular.

Modularised structures have existed in Hungarian VET qualifications since 2006; all school-based IVET programmes have been modularised since 2008/09, and are listed and grouped according to ISCED levels on the national qualifications register (OKJ) (Cedefop, 2011). Established in 1993, the OKJ was revised in 2004/05 after an analysis of employment structures and profiles, and reissued in 2006. It contains modular matrixes showing how the various qualifications are composed. These revisions aimed to establish a modular qualifications structure based on competences, with greater links to the labour market and more flexible training routes. The government plans to reform vocational schools by introducing a 'dual' education model for young people, delivering vocational theory in schools and practical training in the workplace.

Portugal introduced modularised vocational education to schools in 2007, and this has been compulsory since 2008/09. Decree-Law No 396/2007 created a national qualifications system (SNQ), introducing modularisation to the Portuguese qualifications system and covering secondary school curricula and pedagogies. This introduced 'accumulative modules' which can be combined or complemented with other modules (Cedefop ReferNet Portugal, 2010) and determined that vocational training should be 'structured in modules of variable duration' (Schreier et al., 2010a, p. 38). The National Agency for Qualifications (ANQ) was established in 2007 and in 2009 made recommendations to improve vocational guidance and promote greater networking with business and the labour market. An integrated education and training programme, the PIEF (*Programa integrado de educação e formação*), was established, aimed at young people deemed to be at risk. The PIEF provides personalised educational plans with vocational training provided by local public and private bodies with programmes divided into training units. This modular approach has been deemed successful for improving the retention rate in compulsory schooling (Lourenço, 2010).

The final country in the third phase is Luxembourg, where all relevant training occupations have a modular structure (Euler and Frank, 2011), including basic vocational training courses leading to the vocational capability certificate (*Berufsbefähigungszeugnis/certificate de capacité professionnelle*, or CCP) and

http://www.jusline.at/index.php?cpid=f04b15af72dbf3fdc0772f869d4877ea&law_id=159 [accessed 14.8.2015] (in German only).

initial vocational training courses leading to the vocational aptitude diploma (*Diplom DAP/diplôme d'aptitude professionnelle*) and the technician diploma (*Techniker-diplom/diplôme de technicien*, DT) (ibid.; De Carolis, 2010, p. 5 et seq.). The process of restructuring IVET began in 2008; by 2010, the first 16 occupational profiles had been adapted and implemented in both vocational schools and training companies and the phased modularisation of the vocational education and training system was envisaged to be completed in the following years.

2.1.4. Phase IV: Latvia

Of the countries studied, only Latvia is yet to move towards a modularised or unitised system (for at least a proportion of the system). However, it is clear that IVET policy reform is moving in this direction, and it is expected that a modular system will be implemented. An ESF-funded project, 'Development of sectoral qualifications system and increasing the efficiency and quality of vocational education (2010-13)', was implemented by Latvia's State Education Development Agency, under the direction of the Ministry of Education and Science. The project led to the establishment in 2011 of sectoral expert councils in 12 economic sectors to review skills and competences and set relevant occupational standards. A pilot was also conducted of a system to validate and recognise knowledge, skills and competences gained outside formal education (Cedefop, 2013a). Part of the project was intended to support the introduction of a modular system in the development or improvement of both IVET and CVET (European Commission and AIC, 2012, p. 68) although little specific information is currently available in relation to this.

2.2. Key actors and decision-making processes

Debates surrounding education and training policy are couched in multi-layered discourses, are often partisan and tend not to be linear. This section aims to provide a simplified overview of trends, identifying key actors and promoters of modularisation and unitisation in the 15 countries. In particular, we distinguish between 'top-down' and 'bottom-up' decision-making processes and briefly consider the relationships between employers, providers and social partners.

Many countries in this study also display trends towards increasingly decentralised VET systems, with decisions and greater autonomy in relation to the development of modules and curriculum content devolved to local education providers and teachers. Devolved systems are particularly prominent in Denmark and Italy, where literature notes that there can be no single profile of VET due to

the variations by region and local education providers (Cedefop and ISFOL, 2003, p. 13; Schreier et al., 2010a). This is also the case in the Netherlands and Poland.

A social partnership model is an important factor in decision-making in Denmark, Germany, Luxembourg, Austria and Finland. Here, social partners (trade unions and employers' representatives) play a key role in the development of modularisation and unitisation.

2.2.1. Top-down approaches to decision-making, with the adoption of national initiatives directed by the government: England, France, Germany, Hungary, Italy, Latvia, Luxembourg, Poland, Portugal and Slovenia

The IVET system in England operates through a centralised structure, often delivered through 'arms-length' and 'non-ministerial' agencies. Numerous institutions compete for students in a highly fragmented system. The Department for Education and the Department for Business, Innovation and Skills are concerned with IVET; in addition, there are the newly created office of qualifications and examinations regulation (Ofqual) and the QCF ⁽⁶⁾. Awarding bodies are recognised by Ofqual to offer vocational qualifications based on QCF.

In France, the main driver for reform came from the State, especially with the introduction of the concept of capitalisable units (*unités capitalisables* or UCs) in 1978 (Académie de Toulouse, 2002, p. 1). The implementation of 'reference frameworks' ⁽⁷⁾ – a basis for newer tendencies to modularise IVET and for the recognition of prior non-certified/informal learning – was at national level as well. A four-year pilot project launched in 2011 to modularise several BTS diplomas (ISCED 4) was initiated by the French Ministry of Education (Kéradec, 2011, p. 70).

In Germany, government and public bodies have regularly encouraged debate around modularisation. In 2006 the German Minister for Education and Research introduced a committee for innovation in German VET. The introduction of training building blocks (*Ausbildungsbausteine*) was one of the outcomes of the committee discussions. The Jobstarter Connect pilot scheme

⁽⁶⁾ A consultation was published in 2014 in England to withdraw the QCF rules: <https://www.gov.uk/government/consultations/after-the-qcf-a-new-qualifications-framework> [accessed 3.9.2015].

⁽⁷⁾ The French system has several 'reference frameworks' or 'standards' (*référentiels*), among which the reference framework for occupational activities (*référentiel d'activités professionnelles*), the training reference framework (*référentiel de formation*) and the certification reference framework (*référentiel de certification*) are mentioned in this paper.

was funded by the ministry (Innovationskreis berufliche Bildung, 2007) and conducted by the Federal Institute for Vocational Education and Training (BIBB). Trade unions and employers' associations were critical of the move towards modularisation, which explains the slow pace of such changes, but attitudes have started to shift gradually in a few sectors.

In Italy, the main driver for modular reform also came from the State. The introduction of IFTS was adopted, organised and planned by individual regions but underpinned by national standards. The top-down approach is reflected particularly in the aims and objectives of the reform, as modularisation is seen as a means to modernise Italy's VET system. Post-secondary vocational training courses are provided by a consortium of schools, training providers, universities, companies and other public and private sector institutions working on behalf of the regions (Frey, 2012).

In Hungary, all decisions concerning the modular framework are made by the government and ministers. Various stakeholders were, however, involved in drafting the New Hungary development plan 2007-13, including ministries and organisations representing teachers and parents. VET teachers have a role as experts in the process of developing modules, and there is some flexibility for local programmes to be designed at school level.

The decision-making process in Latvia is similarly driven by the State. The Ministry of Education and Science develops framework regulations for VET and is responsible for the register of occupational standards, which vocational education establishments must follow. Yet there are signs of a more bottom-up approach to decision-making as a result of the establishment of 12 sectoral expert councils in 2011, based on tripartite cooperation between employers' organisations, trade unions and government representatives (Cedefop, 2013a). The councils play a key role in validation and recognition and in the development of sectoral qualification structures.

A social partnership model is an important factor in decision-making in Luxembourg. However, the key reform proposals are being primarily driven by a national initiative. The Institute of Business Education and Educational Management at the University of St. Gallen and the Federal Institute for Vocational Education and Training (BIBB) from Germany were commissioned by the government to assist in implementing modularisation in IVET.

In Poland decision-making processes are beginning to move from an exclusively top-down approach towards a bottom-up one. While text books are still selected and recommended by the State, the development of modularisation has taken place against a backdrop of decentralisation, whereby schools are

given increasing levels of autonomy to build their own modular programmes within a general framework.

The State has established new organisations in Portugal to assist with the introduction of modularisation and unitisation. In 2007 the Ministry of Labour and Social Solidarity and the Ministry of Education established the National Agency for Qualifications (ANQ, which in 2011 became the National Agency for Qualifications and Professional Education, or ANQEP) to coordinate education and training policies for young people. The National Council for Vocational Training and the National Network of New Opportunities Centres were also created to provide for the recognition, validation and certification of competences.

Finally, the State was also the main driver for reform in Slovenia. A development programme was devised by the Ministry of Education, Culture, Science and Sport to provide guidelines for implementing the reforms. It was supported by various groups of both Slovenian and foreign experts who worked in collaboration with the vocational schools on key issues related to developing the new VET system within this framework.

2.2.2. Bottom-up approaches to decision-making, emanating from local education providers, social partners or employers: Austria, Denmark, Finland, the Netherlands and Scotland

The modularisation debate in Austria has been driven by the needs of business, which is evident from the aspirations and objectives underpinning reform (Tritscher-Archan, 2009, p. 72). The key moves towards reform resulted primarily from an initiative by the Federal Economic Chamber, as well as by a few employers' associations and their research arms. The legislative framework for modularisation was introduced by government bodies, but they now have a lesser role.

In Denmark, modularisation has been driven by the 'tripartite' system, whereby the State, social partners and local vocational colleges all contribute towards the development of VET. Trade committees are responsible for developing qualification standards, modularised courses, learning outcomes and forms of assessment. The Ministry of Education is responsible for the national framework, which stipulates the learning outcomes necessary for the various qualifications, and it is up to individual schools and colleges to adapt and develop frameworks to suit student needs.

In Finland, while the Finnish National Board of Education (OPH) is responsible for the national core framework, the system is decentralised, leaving a level of autonomy to local education and training providers. Social partners play a key role: the OPH works with employers, trade unions, the education union and

the students' union to develop the framework. Providers are encouraged to develop their own locally approved programmes, determine the make-up of sub-units and plan and organise unit assessment.

The modularised system currently in place in the Netherlands is also marked by a high level of consultation. The country has a single national qualifications structure for vocational training courses, which is the responsibility of sector-specific national organisations – centres of expertise. They are responsible for facilitating the joint committee on vocational education and business (*paritaire commissie beroepsonderwijs bedrijfsleven* or PCBB), made up of representatives from companies and vocational schools. It is this body that conducts much of the discussion and work on curriculum and qualification development. The Dutch Ministry of Education approves new qualifications and amendments to existing ones.

In Scotland, which represents an institutionally led model, qualifications are developed by professional bodies, education staff from schools and colleges, and employer and trade union representatives. The Scottish Qualifications Authority acts as both an accreditation body and an awarding body (one of a number of awarding bodies in Scotland). It has a statutory role to approve and accredit all types of qualifications (other than degrees) and regulates and approves awarding bodies to deliver qualifications through centres of learning.

2.3. Rationale for introducing modular and unitised structures

A country may have both internal and external reasons for introducing modularisation and unitisation. The rationales behind the general move towards modularisation and unitisation among the countries in this study are varied, and reflect the contexts and issues specific to each country. However, common features in several countries are linked to a desire to:

- (a) introduce greater flexibility (both external and internal) into the system;
- (b) make VET more attractive and raise its status;
- (c) increase participation rates and/or reduce early dropout;
- (d) meet changing labour market needs and promote links with the labour market;
- (e) combat high youth unemployment.

2.3.1. An overall key theme: a desire to create a more flexible system

Flexibility can be understood on different levels:

- (a) in relation to the labour market, it addresses a need to adjust to the demands of employers and the increasingly rapid changes in occupations brought about by new technologies. In the Netherlands, modular structures were intended to help coordinate training with the demands of the labour market. A simplified process for supplementing and amending individual learning elements also ensures that learners are fit for the workplace and creates a model for lifelong learning. Overall, modernising vocational education and training was intended to provide flexible and differentiated training provision that could be tailored to the needs of the labour market and of society (Frommberger, 2004, p. 130).

A flexible modular structure makes it easier to tailor education and training provision to sector requirements, as it entails a simpler process for updating the curricula. If an occupational area has modernised some specific qualifications, then only a few modules need to be updated or replaced, rather than the whole training. This is driving the implementation in England, Germany, Hungary, Luxembourg and Scotland;

- (b) in relation to the students themselves, a more flexible system enables them to choose the elements of programmes that interest them most. In Poland, the increasingly modularised system was described as a chance to create individual learning pathways for students. In Germany, modules also need to reflect the interests of the individual learners. If learners have the option of gaining a part-time qualification, there is less risk that they will drop out of training entirely and this also makes it easier to combine training with other personal or family commitments. Moreover, modules form a bridge to continuing training as well as a horizontal link to other occupational or activity profiles.

In Italy, IFTS courses also aim to enable learners to enter working life smoothly and rapidly. Modules avoid both rigid and highly prescriptive standards on the one hand and the formlessness of complete freedom to design programmes and select training formats on the other, offering the advantage of being flexible and adaptable to regional specificities (De Angelis and De Angelis, 2007, p. 85).

2.3.2. More attractive and inclusive VET systems, reflected in participation rates

In many countries, the target market for modularised programmes appears to consist of young people in need of additional support, even if this is not explicitly stated. Frequently, improved career guidance structures have been introduced

alongside new modular systems, which is an indication of the participants requiring extra input.

In Luxembourg, the promotion of easier access to, or re-entry into, the VET system aims to counter high failure and dropout rates and to help weaker learners to complete individual modules successfully. These measures are intended to have a positive impact on young people's motivation and on the provision of targeted support measures through early identification of learners' problems as they complete individual modules, and to allow learners to retake individual failed modules rather than requiring them to retake an entire year's training. Portugal has reinforced the modular structure of its programmes (Cedefop, 2008a) and updated its qualifications in an attempt to encourage more young people to stay in education and training and to allow easier progression between primary and secondary education and IVET programmes.

Several countries have set national targets to increase the proportion of students completing VET qualifications. In Hungary, the government has set targets to increase participation in vocational schools by 35% and improve their low status. In Latvia, targets have been set to reduce the number of dropouts and a more flexible, individualised system is intended to appeal more to young people and to help boost participation in VET.

In countries where VET traditionally has a lower status than general education (Denmark, England, Hungary and Scotland), reforms in mainstream VET are aimed at meeting the needs of the specific groups of young people who access these programmes, particularly if general education courses have not been modularised, as in Scotland. Literature from Hungary points to a need to provide VET opportunities for its Roma population, which makes up a large proportion of vocational school learners and has high levels of dropout.

Portugal's PIEF programme is aimed at young people 'at risk', includes a modular programme and provides personalised education plans. In Germany, pilot schemes are available for continuing training for the 'older young unemployed' or preparatory courses with skills modules. Finland has a range of modular prevocational and alternative VET programmes targeted at unemployed young people, weaker students, immigrants and the disabled.

In France, several modular programmes between the 1970s and 1990s were targeted at specific groups (disadvantaged young people, young people with no school-leaving qualifications, the unemployed and so on) (Ertl, 2002, p. 175). The individualised training credit (*crédit de formation individualisé*, or CFI programme introduced in 1989) was aimed at those aged 16 to 25 who were unemployed and had no formal school leaving qualifications, enabling them to complete a series of cumulative, discrete and individually certified modules. In line with ideas to

simplify education, to recognise learning and to strengthen European mobility, newer trends in modularising French IVET no longer focus on special target groups alone.

2.3.3. Better coordination of training and the world of work

Learning outcomes and competence-based learning play an important role in bridging the worlds of training and work. Reforms in a range of countries are intended to improve quality and flexibility, to reflect the needs of society and the requirements of employers better.

In Finland, Sahlberg (2006) pointed to a lack of fit between vocational courses and the world of work, while the OECD (1999) referred to 'dissatisfaction' in the way that upper secondary vocational education prepared young people for working life. The most recent development plan for 2011-16 displays a continued desire to move VET closer to the world of work, with an announcement of further funding for pilot projects that provide more flexibility to young people through increased on-the-job training (Cedefop ReferNet Finland, 2011).

Similarly, in Hungary, there were concerns that VET qualifications were too theory-based and did not satisfy labour market needs. This led to the revision of the national qualifications register in 2006 and the introduction of a modular qualifications structure. A desire to bring training more in line with the requirements of the labour market was also a strong factor in Italy, where more skills-based training was introduced.

In Austria, where modularisation is just one possible model for organising education and training for occupations, the general view is that occupational specifications should adopt a modular structure only where actual needs at company level make such restructuring necessary and where it is cost-effective. It has been argued that it provides an opportunity to offer in-depth study in a specialised area, allowing for the streamlining of occupational specifications, and is intended to help tackle the dwindling supply of apprenticeships (Archan, 2005). Growing specialisation in certain occupational areas has been a factor in introducing modules in Germany, thus enabling training providers to offer partly specialised provision (Pilz, 2002a; 2002b).

A desire to promote links with social partners, especially employers' organisations, and to allow them to offer input to the design of qualifications was also cited. In Latvia, greater cooperation is planned between the State, local government and business to provide a more flexible response to labour market needs and to develop an education programme based on modules, while the Polish government is also keen to re-establish links between vocational schools and employers.

2.3.4. Increased student mobility and more transparent VET systems

Other reasons for introducing modularisation and unitisation include:

- (a) greater mobility between pathways in VET;
- (b) more transparent VET systems;
- (c) alternative provision due to the reduction in the number of apprenticeships;
- (d) a step towards credit accumulation and transfer;
- (e) adherence to EU policies;
- (f) cost savings;
- (g) reduced length of study time for a qualification;
- (h) standardisation in a highly diverse system.

A desire for increased mobility of students, allowing them to move in and out of training, is a factor in several countries. In Portugal, where many young people continue to leave school with few qualifications (Santiago et al., 2012), mobility between the various education pathways has been a priority and greater flexibility has resulted from recent reforms. In Slovenia, the modularisation of vocational training was also intended to make it easier to enter and to leave specific courses of training and to complete courses in stages (Svetlik, 2004, p. 49).

In England and Scotland, the need to establish a coherent vocational alternative to the academic track is likely to become even more pronounced given the intention of the British government to extend the age of compulsory education to 18 years. In England, this will be achieved through greater differentiation of the main routes through the senior phase of education (tracked system) rather than offering combined academic and vocational qualifications (unified system). Permeability and transferability between vocational and academic qualifications is thus becoming a priority. In Scotland, the emphasis is on redesigning modular-based qualifications in the upper secondary schools and allowing young learners to attend colleges to undertake qualifications.

In some countries the rationale behind the restructuring of qualifications was also related to a desire for more transparency of the VET system. Denmark, Austria and Finland simplified their IVET provision by streamlining different training occupations and qualifications. This has been achieved by reducing, or 'consolidating', the number of individual training occupations, and formulating more consistent occupational specifications. Restructuring in Luxembourg aims to increase transparency and clarity by providing an option to link different courses, resulting in a more efficient design of training provision. The plans to revise the qualification structure in the Netherlands also reflect this rationale.

The notion of credit accumulation and transfer is strongly linked to modularisation, particularly in the newer EU Member States. The establishment of national qualifications frameworks aligned to the European qualifications

framework (EQF) has gone hand in hand with the modernisation of VET systems. The move towards modular and unitised structures is also intended to assist in creating integrated vocational systems in line with EU policies and standards such as ECVET or EQF in Luxembourg, Hungary, Poland and Portugal. In Portugal, European developments have been described as the 'driving forces' in the reform of the Portuguese VET system (Valente and Wochnik, 2008).

In conclusion, the growing flexibility of labour markets, the rapid pace of change in technology and work organisation and a need to make VET more attractive and flexible for students are among the most important driving factors. In addition, the quest for higher mobility between vocational qualifications, developments in European VET policy, improved credit accumulation and transfer and a desire to reduce youth unemployment, play a major role in the decision to reform IVET along modular and unitised lines.

CHAPTER 3.

Comparative analysis across the 15 countries

Chapter 3 aims to provide a more detailed comparative analysis of the situation in the 15 countries.

3.1. Forms of modularisation and unitisation

This section gives an account of the forms of modularisation and unitisation across the 15 countries, from the more 'radical' forms to the more traditional or 'holistic' forms of training. We start with an explanatory framework, outlining the criteria used to describe modularised and unitised systems.

3.1.1. An explanatory framework

One way of getting closer to a definition of modularisation and unitisation is to develop more or less abstract criteria to describe an ideal type of a radical concept of modularisation (Rasmussen, 1998, pp. 40-45; Pilz, 2002a; 2005). The following five criteria have been identified:

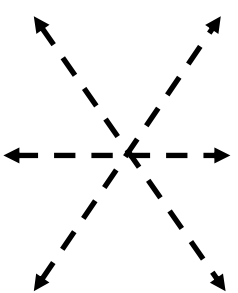
- (a) a clear start and end point for a module, governed by the learning content in the curriculum and/or qualifications. Setting a timescale in which the module must be passed is optional. This structure allows a highly flexible combination of different modules, breaks between participation in different modules and no limits to the period over which a module must be taken;
- (b) an output-orientated (outcome-based) system. The link between the formal learning process and the assessment and certification of the learning outcomes is very weak. In its purest form, modularisation involves assessing someone's skills against a standard without necessarily having taught the individual;
- (c) individual certification of each module passed. Each module is well documented and has an independent value in the education and training system or on the labour market. This is crucial if modules are to be discrete, free-standing units of learning;
- (d) no restrictions regarding participation or the length of participation. Each student may start a module at any time and because each module is freestanding, no previous knowledge, skills or qualifications are required. The certification system also means that students do not have to enrol for

qualifying programmes (the term ‘programme’ refers here to ‘an officially implemented system’ rather than the specific combination of courses taken by any individual student);

- (e) no regulation governing which training providers are allowed to offer which kind of programme. What is more important is the question of the relationship between the requirements of the curriculum and the ability of providers to teach, supervise and assess a given module. Any school, college, private training organisation or company that has been approved may offer modules.

There are potentially different forms of modularisation and unitisation that can be better understood as a range of dimensions across a spectrum, with ‘radical’ forms of modularisation at one end and the traditional ‘holistic’ training (*Berufskonzept*), such as apprenticeships and some school-based approaches, at the other end. The term *Berufskonzept* (vocationalism) (Deissinger, 1996; Ryan, 2003) relates to the philosophy of vocational education that makes up the theoretical backbone of the German vocational system. It can be argued that the dual system, the underlying theoretical criteria of the *Berufskonzept* and other school-based approaches are diametrically opposed to the modular system. Figure 3 offers a model in which modularised approaches and the traditional holistic approach to vocational education and training (VET) are extreme types of vocational education, with a spectrum of mixed concepts in between.

Figure 3. **Model for the categorisation of vocational education systems on a spectrum between radical modularisation and the traditional holistic approaches**

Radical modularisation	Mixed concepts	Traditional holistic training
Module boundaries governed by learning content and/or qualifications		Unified programme of vocational education
Flexible combination of different modules		Linear structure of learning content
Output orientation (outcomes-based)		Strong link between the learning process and the learning goal
Certification of individual modules		Certification only after the successful completion of the end assessment
Unrestricted entrance and exit opportunities for participants		No certified exit opportunities for participants before passing the final assessments
Unrestricted options to offer all types of modules by all kinds of schools and training providers		Regulation to offer vocational education only by special training and learning providers

Source: Authors, based on Cedefop, 2013b.

Based on this framework, Table 3 provides a categorisation of countries in terms of where they fit on the modularisation spectrum, with respect to five criteria: learning content; learning processes; certification and assessment; movement in and out of training schemes; and training providers.

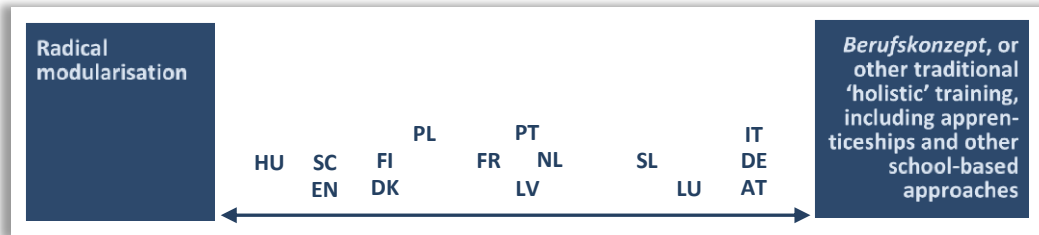
Table 3. **Overview of country positioning on the modularisation spectrum, based on the five criteria**

Radical modularisation	Strongly applicable	Combination of both models	Strongly applicable	Traditional training
Module boundaries governed by learning content and/or qualifications, flexible combination of modules	DK, HU, PT, SC	AT, SL, DE, EN, FR, FI, LU, LV, NL, PL	IT	Unified programme of vocational education, linear structure of learning contents
Output orientation (outcomes-based)	EN, HU, LV, PL, SC	DK, FI, FR, NL, PT	AT, DE, IT, LU, SL	Strong link between the learning process and the learning goal
Certification of individual modules	DK, HU, FR, PL, EN, FI, SC	LU, LV, NL, PT, SL	AT, DE, IT	Certification only after the successful completion of the end assessment
Unrestricted entrance and exit opportunities for participants	DK, FI, FR, HU, NL, EN, PT, SL	LU, LV, PL, SC	AT, DE, IT	No certified exit opportunities for participants before passing the final assessments
Unrestricted options to offer all types of modules by all kinds of schools and training providers	EN, FI, HU, SC	DK, LV, DE	AT, LU, NL, PL, FR, SL, PT, IT	Regulation to offer vocational education only by special training and learning providers

Source: Cedefop (2013b).

Figure 4 provides a synthetic view of how countries can be positioned on the spectrum. This is not an attempt to gauge the forms of modularisation in absolute terms or to make precise quantitative distinctions between countries; the aim is to illustrate the situation that emerged from the findings of the study.

Figure 4. **Synthesis of country positioning on the modularisation spectrum**



NB: Latvia does not currently have a modularised system in place. However, there are plans in place to introduce such a system, and as such it has been categorised as representing a combination of both models.

Source: Cedefop (2013b).

Each country is explored in further detail below.

3.1.2. **Radical forms of modularisation: Denmark, England, Finland, Hungary and Scotland**

3.1.2.1. *Denmark*

While Denmark includes aspects of both forms of training, it leans more towards the radical end of the spectrum. For the purpose of this analysis, the focus is only on the modularised basic course of the initial VET (IVET) technical and commercial programmes. The main course of these programmes follows the more traditional alternance apprenticeship model and is not modularised.

In terms of learning content, the Danish VET system is quite innovative as it takes a student-centred approach and is flexible both in terms of time and content (Jørgensen, 2011a). There is no requirement for modules to be followed sequentially. Students are able to learn in different ways and in different sequences. What they are required to achieve remains the same irrespective of how they learn. The modularised structure in the school-based basic programmes is output-oriented. Qualifications stress the result of a learning process rather than the length or content of programmes (European Commission and Danish Evaluation Institute, 2011). The system is increasingly focused on learning outcomes, or competence objectives (Jensen and Buch, 2008; European Commission and Danish Evaluation Institute, 2011). However, there is some debate as to how fully the output model has been embraced. The OECD (2010b, p. 15) notes that countries such as Denmark and Norway ‘have made little headway in preparing their education and training courses in terms of learning outcomes’, although it acknowledges that stakeholders are increasingly moving away from the input model.

Denmark also leans towards the radical form of modularisation in terms of certification and movement in and out of training schemes. Competences are

defined on an individual basis, with both students and their tutors drawing up and evaluating objectives in the personal education plan (Schreier et al., 2010b). Students are tested between modules (mainly formatively) to ensure they have achieved the competences described. Partial, or 'stepped', qualifications known as *trin* are generally split in two and are available on some IVET programmes. Targeted mainly at weaker students, they allow learners to obtain part qualifications which count towards a complete qualification that can be completed at a later date. In practice, most learners tend to complete the full qualification, partly because employers attach less value to stepped qualifications (Schreier et al., 2010b), and amid concern from trade unions that they undermine the value of skilled workers' qualifications (Juul and Jorgensen, 2011). As a result, stepped qualifications have been abandoned in some VET programmes (ibid.). Danish VET programmes are provided mainly by vocational colleges (agricultural colleges, commercial colleges, social and healthcare colleges, technical colleges and combination colleges) and companies.

3.1.2.2. *England*

The current IVET system in England is based on the concepts of unitisation and modularisation. Learning content is a combination of both models, in that it is based on units within qualifications which can be combined as core and optional elements, and have credits attached according to learning outcomes. Although modularised, they are linked to an overarching qualification structure and form a coherent whole often based on national occupational standards.

The competence-based principles underpinning the qualifications are output-oriented and outcomes-based. They are focused on achieving the standards required for employability. In pedagogical terms, this gives the teacher scope to design the curriculum to meet learners' needs and to respond flexibly to changing circumstances. Although units are assessed independently within qualifications, they often form clusters to give awards at certificate and diploma level. This structure can accommodate the recording of individual units as part of a learner's record of achievement. Although the system is unitised, it often does not allow complete freedom of movement of the learner. Once approved, a range of training providers can deliver the vocational qualifications. These can be colleges, private training providers and/or employers. This is intended to provide learner choice and create competition between suppliers to raise standards.

3.1.2.3. *Finland*

Finland also leans towards a more radical concept of modularisation. However, in terms of learning content, Finland represents a combination of both models.

According to CIMO (2010), Finnish VET qualifications are broad, prepare learners for more than one profession and provide students with a degree of choice and individualisation in designing their own combination of units. In recent years, the national core curriculum has shifted the emphasis away from input towards an outcome-oriented approach, moving towards new forms of assessment such as skills demonstrations. However, some aspects of the input-based system remain in the Finnish VET, in terms of required teaching hours or modules for specific subjects (Cedefop, 2009).

Individual modules are certified separately and can be certified at various points, rather than at the end of the final assessment. Assessment includes formative and self-assessment and since 1998 has included the use of skills demonstrations (*ammattiosaamisen näytöt*). Mostly conducted during on-the-job learning, they are designed to replicate real work situations as closely as possible (Stenström and Leino, 2009). It is also possible for students to move in and out of the training scheme prior to the final assessment. Upon completing their studies, students are awarded a qualification certificate. Those who leave without finishing a vocational qualification receive a resignation certificate. Partial awards are also available where students have studied several elements of the overall programme (Cedefop, 2008a) although more information is needed as to how much such routes are used. The number of training providers has decreased in recent years, while at the same time the number of students has increased. This is the result of a policy of merging VET institutions into bigger organisations and networks, intended to provide schools with more resources and consequently allow students more choice. Attempts have been made in recent years to build links between vocational and general upper secondary schools, and to make it easier for vocational students to choose modules from both programmes (Cedefop and Kyrö, 2006). Such bridging programmes are made possible via local and regional cooperation networks made up of the two types of institutions.

3.1.2.4. *Hungary*

Hungary also represents a more radical form of modularisation. In terms of learning content, VET qualifications are made up of core and optional modules, which allow students a degree of flexibility. The system focuses on the development and assessment of core competences, which are listed under each task profile making up the modules. There has been debate about using the term 'learning outcomes', but the modules list core competences and are mainly task- and competence-based. Changes are being introduced to the assessment and exam system. Currently, learners have to sit module exams after completing each module, and obtain a qualification upon passing all the module exams. A

form of integrated assessment is being introduced under the new system whereby a more complex exam will cover all the topics in the module. The Hungarian VET system also includes partial qualifications and 'built-on' qualifications, which can be gained by completing a set of modules, allowing flexibility and progression. Partial qualifications are offered mainly by the local special needs vocational schools for those who have not completed a full VET programme, but who have achieved a prescribed number of modules. Training providers include (upper) secondary, post-secondary and higher education, although young people can also obtain their first vocational qualification in adult training.

3.1.2.5. *Scotland*

The current IVET system in Scotland also leans towards the radical end of the modularisation spectrum. In terms of learning content, units within qualifications can be combined as core and optional elements and credits are attached according to learning outcomes. Although modularised, they are linked to an overarching qualification structure devised by the Scottish credit and qualifications framework (SCQF). The competence-based principles underpinning the qualifications are outcomes-based and focused on achieving the standards required for employment and higher education. In pedagogical terms, the teacher has the scope to design the content of the curriculum to meet learners' needs and to respond flexibly to changing circumstances.

Although units are assessed independently within qualifications, they often form clusters to give awards at national certificate and higher national certificate and diploma level. This structure can accommodate the recording of individual units as part of a learner's record of achievement. Although the system is unitised, it often does not allow complete freedom of movement of the learner. Credit transfer arrangements and progression opportunities are at best partial across the academic and vocational tracks (Cedefop, 2010b; Howieson and Raffe, 2012). Training providers are often driven by financial targets that are based on learner completion figures. There is therefore pressure to ensure that students complete their studies or achieve milestone targets to fund the programmes. Once approved, a range of providers can deliver the vocational qualifications.

3.1.3. Traditional holistic training: Germany, Italy and Austria

3.1.3.1. Austria

Overall, the Austrian model stays close to the roots of traditional apprenticeships within individual training occupations: training is geared specifically towards the requirements for skilled workers in their chosen profession (Krebs, 2008, p. 37). A limited number of apprenticeships are available in modular form. This practically focused VET may thus be identified as a hybrid form along the continuum between modularisation and *Berufskonzept*, in which learners internalise an occupational identity.

Learning content must be followed in the order specified. Syllabuses are geared towards a specific learning package and separate sections of learning follow a relatively linear order. Acquiring a State-approved and protected qualification requires successful completion of the entire training course, so there is only limited scope for flexibility and module combination. The learning process is very closely linked to the achievement of learning goals. The transfer of the knowledge and skills specified in the curriculum is seen in content terms rather than in terms of time spent. However, no learner may take the examinations without having completed the stipulated learning process. In terms of certification, building blocks may not be taken, assessed or certified individually. The final assessment takes place at the end of the training period stipulated in the training contract. Within traditional 'holistic' training, access to these modular training occupations is currently restricted to those with a training contract, so free movement in and out of this kind of training is limited. Learning is very site-specific and is restricted to specific training providers; training companies take responsibility for the technical and practical aspects of training while vocational schools provide the theoretical side. The companies have to be authorised by the chamber of commerce or handicrafts to get permission to train.

3.1.3.2. Germany

If we apply the indicators for an integrated occupation-based training and for a modular approach to Germany's qualifications that include electives, it is clear that they deviate from the traditional training paradigm in just one respect – the wider choice of skills units.

In terms of learning content, elective skills are new to the traditional structure of the vocational education and training system and may, with some limitations, be identified as an element within a modular concept. However, learners do not have a completely free choice of skills and this element is limited, in terms of time, to the latter part of the training period (Rulands, 2009). The learning

process and the learning outcomes are closely linked. Normally, learners participate in formal courses and take examinations until they have completed the formal training. Certification and assessment also follow the traditional *Berufskonzept*. Individual skills units are validated only as part of the full award and form an integral part of it.

There is no free movement into the training scheme, and neither is there an option to move out of it before final assessment. To start the vocational training, learners need to have a training contract with a training company (Cedefop et al., 2007). If they drop out, they have no opportunity to obtain certification for courses they have completed. Only the final assessment provides a State-approved award. The scope of learning providers depends on the occupation; training companies and private training institutions are allowed only if they get an official authorisation. Vocational schools are responsible for the theoretical part of the training (Cedefop et al., 2007).

3.1.3.3. *Italy*

Higher technical education and training (IFTTS) courses in Italy are structured into modules that represent discrete learning units and can be seen as collectively representing a group of competences (De Angelis and De Angelis, 2007, p. 71). In terms of learning content, course requirements are configured in such a way that for each course, a series of requisite modules is stipulated. It is, therefore, not possible for learners to combine the requisite modules from their chosen course with modules from other courses. As in the traditional training model, there is a close link between the learning process and the achievement of learning objectives. Examinations may not normally be taken until the learner has completed the specified course of study and training, making training highly location-specific. Learners must attend for at least 75% of the total teaching hours, although those with skills in certain modules may be given total or partial exemption. Certification is available only upon completion of training. Learners are awarded a nationally recognised qualification that lists the number of credit points they have accumulated. Where appropriate, these credit points may also be transferred to courses at a higher level (Cedefop ReferNet Italy, 2011, p. 54). However, successful completion of the course is a prerequisite for the award of the State-recognised certificate. It is not possible to move out of the training scheme before the final assessment. The formal requirement for participation in such courses is either the secondary school-leaving certificate (*diploma e certificato di fine studi secondari superiori*), which authorises a student to move into the penultimate or final year of a grammar-school equivalent (the *liceo*), or

successful completion of a four-year course of training, which requires additional certification of the vocational and academic competences acquired (Frey, 2012).

In terms of learning providers, a combination of both models is evident. Various types of colleges, vocational schools, training centres and companies are able to provide the modules, if they are authorised by the State (Europäisches Berufsberatungszentrum, 2003). The training company is responsible for delivering the subject-specific practical training while the vocational school delivers the specialised theoretical teaching.

3.1.4. Combination of both forms: France, Latvia, Luxembourg, the Netherlands, Poland, Portugal and Slovenia

3.1.4.1. France

France represents a combination of both radical forms of modularisation and more traditional training. In terms of learning content, the clustering of 'reference frameworks' ⁽⁸⁾ into different 'units' may create the impression of a modularised system. However, the completion of each individual unit is obligatory and the learners are not free to combine the different units flexibly or in their sequential arrangement (Malicot, 2008, p. 8). These discrete units, which form part of the reference framework for a specific vocational qualification, are highly standardised and include concrete descriptions of the performance criteria to be achieved and detailed examination regulations (Académie de Toulouse, 2002, p. 5). Although the aim of the reference frameworks was to manage the process of skills acquisition independently of specific input by focusing on the expected learning outcomes, this outcome orientation is actually not fully realised (Ott and Deissinger, 2010, p. 505).

The certification reference framework (*référentiel de certification*) is developed from the reference framework for occupational activities (*référentiel d'activités professionnelles*). It sets out a grid of competences that are assessed and certified as part of the award (Brockmann et al., 2008, p. 233) and is subdivided into different certification units. Each unit is described in outcome terms and is based on three descriptors: capacities, skills and knowledge (Project EQF Predict, 2009, p.1 et seq.). Movement in and out of training schemes is possible to an extent; in IVET, units are capitalisable over time, until graduation

⁽⁸⁾ The French system has several 'reference frameworks' or 'standards' (*référentiels*), of which the reference framework for occupational activities (*référentiel d'activités professionnelles*), the training reference framework (*référentiel de formation*) and the certification reference framework (*référentiel de certification*) are mentioned in this paper.

(in general within the limit of maximum five years accumulation) (ibid., p. 6). Nevertheless, the aim for learners is always to work towards the full State-recognised award. The State, in cooperation with social partners, is responsible for approving the reference frameworks and for delivering diplomas. Further, the State is the main training provider (e.g. in the vocational full-time schools) (Ott and Deissinger, 2010, p. 505).

3.1.4.2. *Latvia*

Little information is available as to the exact forms that modularisation and/or unitisation may take in Latvia, so it is difficult to categorise the country according to the analytical framework.

Latvian literature emphasises a need for flexibility in the modernised VET system; as such, it implies that there may be opportunities for participants to combine modules and to move within programmes. However, this currently remains unknown.

Despite this uncertainty, some aspects are clear. For instance the system appears to be moving from an input- to an output-based approach (European Commission and AIC, 2012). The new Latvian qualifications framework follows the structure of the European qualifications framework (EQF) and consists of eight levels. Learning outcomes are expressed in three dimensions – knowledge, skills and competence – in line with the EQF. Students are assessed against these outcomes via a qualification exam. It is, as yet, unclear whether modules will be individually certified or whether students will be free to move in and out of training under the new system. There have been gradual moves towards a more flexible VET system to meet labour market needs, with greater cooperation between the State and businesses. In terms of training providers, IVET is provided by a range of State, local authority and private vocational educational institutions. To be accredited, providers must comply with State vocational education standards, the occupational standards and vocational education programme standards. Vocational education programmes must reflect the relevant knowledge, skills and competences included in the standards to be licensed or accredited (European Commission and AIC, 2012).

3.1.4.3. *Luxembourg*

Both the *Berufskonzept* and some aspects of the radical model are used in Luxembourg. In terms of learning content, the hybrid approach is evident. Each building block is designed to run over one or two semesters and the blocks are usually taken and assessed sequentially (MENFP, 2011, p. 22). The sequence of individual blocks follows a logical scheme. Modules are not co-requisites, and

they may be taken in parallel (MENFP, 2011, p. 19). The learning process and learning outcomes are closely interlinked in the module description. Learners must complete a formal programme of study and learning so there is restricted scope for training outside these locations. With regard to certification, since each module represents a unit of training, modules can be individually certified. Individual module assessments follow the completion of a module and are put together to make up a learner's mark for a building block. If a learner fails a module, he or she is able to retake it where necessary (MENFP, 2011, p. 38). Examinations are supplemented by integrative projects that focus on developing the skills needed to coordinate these different building blocks (MENFP, 2011, p. 22). Assessment is carried out by central examinations boards and must be passed for the learner to complete his or her vocational training (Euler and Frank, 2011).

Learners are not allowed to move out of the training scheme freely. However there are possibilities for learners to realign their choice of vocation, where no more than half or two thirds of the modules (depending on the type of training) have already been completed (Euler and Frank, 2011). In terms of learning providers, the syllabus assigns the modules and responsibility for assessment to the training company or vocational school. In general the company site is responsible for delivering practical training, while the school site provides theoretical teaching (MENFP, 2011, p. 19), following the holistic concept of training.

3.1.4.4. *The Netherlands*

The Netherlands represents a combination of both models in respect to most areas. Learning content is made up of core tasks (*kerntaken*), which are made up of work processes and competences. Students must complete all the core tasks to obtain a qualification. While the centres of expertise stipulate which core tasks should be covered as part of a qualification, schools may combine core tasks flexibly as they see fit, and may also structure teaching along modular lines should they wish. Nevertheless, study interviewees noted that many schools choose to deliver learning in a traditional, linear, way. The *middelbaar beroeps-onderwijs* (initial training at upper secondary level, MBO) diplomas are output-oriented, as they are based on the core tasks, work processes and competences embedded in them. Competences in the Dutch system relate to knowledge, skills and attitude (Cedefop and Maes, 2004).

It is up to schools to determine whether individual core tasks should be individually certified. However, even where core tasks are individually certificated by schools, these are not valued on the labour market. It is also at the school's

discretion as to how assessment should be conducted. Some conduct their own assessment, while others 'buy in' exams from centres of expertise. Some schools assess students on a 'per core task' basis, while others focus on assessing skills as and when the opportunity arises in real life situations. Movement in and out of training schemes is similarly largely at the discretion of schools. It is usually possible to leave and return to a programme at a later date. However, movement between sectors and institutions is complicated by funding issues. There are few partial qualifications; generally, students must complete all the core tasks before they can complete the diploma. Vocational training institutions are required to report regularly on their work and all training providers have to meet certain requirements and be centrally registered. National sectoral organisations are responsible for ensuring and maintaining the quality requirements of training companies and they assess whether an individual company is fit to offer training.

3.1.4.5. *Poland*

The Polish VET system also represents a hybrid model. How learning content is organised is at the discretion of schools. However, the system remains somewhat centralised, with the Ministry of National Education responsible for developing and carrying out national educational policy, setting the core curricula for general and vocational education and approving the textbooks used. The National Research Institute notes that although modularisation is not a new concept in Poland and educational reform allows vocational schools to develop their own curricula (approved by the Ministry of National Education) many schools continue to use centrally approved programmes.

Since the curricular reform of 2009, there has been a more flexible approach to teaching and a move towards a learning outcomes-based approach across the education system (European Commission, 2011). The core curricula for individual subjects specify learning outcomes in terms of specific skills to be acquired and are set out in terms of objectives, tasks, content and achievement. As a consequence of this move towards learning outcomes, Cedefop (European Commission et al., 2010b) notes that pedagogical approaches have shifted from teacher-oriented lectures towards a focus on the knowledge, skills and competences that students should acquire. There is the suggestion that learning is sequential and that modules and individual modular units should be assessed, marked and certificated separately (Symela et al., 2007). However, some of the vocational schools that have adopted modular curricula have reported problems in their implementation; for example, there have been difficulties in combining general and vocational modules due to the time differences required to cover each and the rigid exam schedules (Cedefop ReferNet Poland, 2011). Movement

in and out of training schemes is possible to an extent. According to a Polish expert, the emerging modular system allows for horizontal and vertical mobility and makes it possible to commence study at different levels. Cedefop ReferNet Poland (2010a) describes the modular approach in Poland as a 'universal structural concept which offers individuals access to education in different life situations while ensuring vocational mobility' (p. 83). VET is restricted to specific training providers.

3.1.4.6. *Portugal*

Portugal also combines aspects of modularisation with the more traditional training. Qualifications are made up of modules or units of 25 or 50 hours which are included in the national qualifications catalogue ⁽⁹⁾ and can be combined in various ways. While there is a degree of free choice, it is necessary to complete the modules in the chosen pathway as outlined in the national qualifications catalogue to acquire a full qualification. The European Commission and the ANQ note that while the country is moving towards a learning outcomes-based approach, 'qualifications defined by contents (input) coexist with qualifications defined in terms of learning outcomes (output)' (European Commission and the ANQ, 2011, p. 59). In the national qualifications framework (NQF), knowledge, skills and attitude define learning outcomes for each qualification level.

Adults (aged over 18) participating in 'Modular training – Flexible qualification pathways' complete individually certificated and transferable short training units (STUs), while IVET students on the double certificated professional courses are summatively assessed when all the modules of each subject are concluded (European Commission and ANQ, 2011). In terms of movement, one of the objectives of the national qualifications system is to strengthen the degree of integration of academic and double certification pathways by means of permeability mechanisms (European Commission and ANQ, 2011) to allow students to switch pathways should they wish. An expert explained that the system is rather flexible and the philosophy is that 'nothing can be lost' and students may add to their pathways. A range of (licensed) providers deliver education and training, including some regular schools, training centres, professional schools, accredited entities or associations. Vocational training centres, employment centres and external bodies can be apprenticeship coordinators.

⁽⁹⁾ ANQEP, *Catálogo nacional de qualificações* [National qualifications catalogue]: <http://www.catalogo.anqep.gov.pt/>

3.1.4.7. *Slovenia*

Changes in Slovenia's vocational education and training system show a link between the concept of holistic training and the more radical approach to modularisation at both curriculum and regulatory level. Learning content is structured in such a way that learners can switch between training schemes both vertically and horizontally. However, the award of a national qualification requires learners to pass basic mandatory and optional elective types of modules. Learning process and the achievement of learning goals are very closely linked. Learners may not normally take examinations until they have completed the prescribed education programme. In terms of certification, if learners drop out, they have an opportunity to obtain a national vocational qualification on the basis of the modules they have successfully completed (Cedefop, 2008c, p. 51 et seq.). However, the award of an IVET State-approved certificate depends on having successfully completed the education programme and therefore there is an indirect attendance requirement. It is possible to move out of the training scheme before the final assessment. If learners suspend their training or drop out, they can re-enter the education and training system at a later date, an option that is particularly popular among adult learners, according to a Slovenian expert. Learning providers may become involved in delivering training activities only if they have official national authorisation to do so.

3.2. **Modularisation structures**

The modular structures identified in the 15 countries in this study can be categorised as:

- (a) mandatory,
- (b) core and optional,
- (c) specialisation,
- (d) introductory.

This section explores each of these in some detail, with reference to illustrative examples. Several prerequisites are in place to support such structures. All countries in the study have already moved or are moving to a learning outcomes approach and have, or are working towards, a NQF. There are differences, however, in the allocation of credit within modularised and unitised qualifications. For instance, in England, Finland, Scotland and Slovenia units and/or modules are linked to credits. In other countries such as Germany, the Netherlands and Austria, credit is not normally attached to modules or units. This encourages greater integration and coherence of learning within

qualifications, but nonetheless reduces the possibility of credit transfer and mobility between qualifications.

3.2.1. Mandatory structures

Mandatory modules or units are components of qualifications that are required to be completed by learners. The sequence in which they are undertaken can vary depending on the training provider, but all still have to be completed before certification is granted. The units or modules may have individual credit attached to them or credit may only be given for the complete qualification. Although mandatory, the modules and/or units can be either tightly or loosely designed, allowing training providers different degrees of flexibility in how they deliver the module at a local level. Flexibility of module design also allows the provider to update occupational practices at more regular intervals. Less flexible structures take longer to update and often require agreement from all social partners.

In France, mandatory structures are in place in all IVET qualifications. Learning processes are linear and all units must be completed to obtain the qualification. Since 2011, a small number of undergraduate technician certificates (*brevet de technicien supérieur*, BTS) (ISCED 4) have been modularised within a four-year pilot project (Kéradec, 2011, p. 70). Here, a training reference framework (*référentiel de formation*) was created, in correspondence with the certification reference framework (*référentiel de certification*) (existing for each vocational qualification in France). A correspondence between each (training) unit of the training reference framework and one or more 'certification units' has been established. Training units themselves are broken down into modules and credits from the European credit transfer system (for higher education, ECTS) are assigned to training units or modules. These credits can be used for the descriptive certification of the unit ⁽¹⁰⁾.

A French expert explained that there are no opportunities for individual specialisation within the BTS training course; all modules are mandatory and must be completed in a particular sequence. While the 'reference frameworks' enable occupational activities to be classified in a standardised way, the notion of competence (*compétence*) reflects an individual's activities within an occupational process (Bouder and Kirsch, 2007, p. 4). In contrast to the US and British notion of competences, France takes a multifaceted view of a *compétence*

⁽¹⁰⁾ Ministère de l'Education National, de l'enseignement supérieur et de la recherche [French Ministry of Education, Higher Education and Research]: *Brevet de technicien supérieur (BTS): questions/réponses sur l'expérimentation de la modularisation des BTS*: <http://www.enseignementsup-recherche.gouv.fr/cid59116/questions-reponses-sur-l-expérimentation-de-la-modularisation-des-b.t.s.html> [accessed 18.8.2015].

(Brockmann et al., 2008, p. 229) that comprises three dimensions: knowledge (*savoir*); know-how (*savoir faire*); and attitudes and behaviour (*savoir-être*). These three elements also formed the basis for the European 'knowledge, skills and competence' typology (Cedefop et al., 2006), one of the typologies used for the development of the EQF (Bouder and Kirsch, 2007, p. 4).

Approaches to modularisation vary widely in Germany, with both mandatory and specialised structures in place. A small number of State-accredited training occupations are structured on the basis of operational area (*Einsatzgebiet*). Training typically lasts for three or three and a half years, and up to one year is dedicated to specific training, during which the skills laid down in the curriculum are developed with reference to the specific operational area in which the learner will be working. At the time of the study, 103 of around 350 training occupations belong to an occupational cluster (*Berufsgruppe*) (KWB, 2010, p. 1), and the emphasis is on shared core skills during the initial stage of training (typically the first 6 to 18 months). After that, training is occupation-specific. Programmes consist of a set number of building blocks (*Ausbildungsbausteine*) which conform to a mandatory structure and which must be completed in a particular sequence. Further details on training building blocks can be found in Section 4.1.

The Netherlands has a single national qualification structure for vocational training courses and it focuses on the final qualification, which shapes course design. Vocational qualifications are made up of a number of core tasks (*kerntaken*) which are broken down into work processes and associated competences. The core tasks are mandatory, with no options for the student to combine or select them differently. However, while the qualification structures themselves are binding, it is up to schools to determine how to teach the core tasks and how to structure learning. There are no partial qualifications available, and students must complete all the core tasks to achieve their MBO diploma. Section 4.1 explores the Dutch IVET system in further detail.

3.2.2. Core and elective structures

For most countries that have adopted modularisation across the entire IVET system, programmes consist of a combination of general compulsory core modules and free choice modules which explore the vocational area in greater depth or at a higher level. Although many of these elective modules are designed in response to employer needs, they also give a degree of choice to learners in how they combine their studies within a qualification. However, in none of the countries do students have an entirely free choice. Even where there is individualisation, students have to choose from set lists and often the free choice element represents just a small part of the overall qualification. The core and

elective model can be found in England, Finland, Hungary, Luxembourg, Poland, Portugal, Scotland and Slovenia.

In England, under the qualifications and credit framework (QCF), all unitised qualifications will typically have learning outcomes, a competence-based framework and a credit rating and level of award attached to them. In this sense they are EQF compliant and support indirectly the European mobility agenda. All QCF qualifications have one of three titles, irrespective of level and dependent only on size: awards (1-12 credits), certificates (13-36 credits) and diplomas (37+ credits) (Wolf, 2011). The qualifications are then broken down into competence-based and separately assessed units. Each qualification has several core and optional units. They are designed on a pass/fail basis and require students to pass every single part of a unit. All apprenticeship units contain learning outcomes and are directly related to specified national occupational standards, drawn up by the sector skills councils (SSCs) to reflect the requirements of current jobs. The actual apprenticeship qualification is made up of three components: knowledge-based technical certificates; national vocational qualifications (NVQs); and general education skills.

Vocational-oriented qualifications are not required to be based on national occupational standards but nevertheless follow a similar structure to NVQs. Most offer core and optional modules and the possibility of progression to higher education.

In Finland, all upper secondary school-based vocational qualifications take three years and are made up of 120 credits (one credit is equal to 40 hours of study). A minimum of 20 credits (six months) of the qualification must consist of on-the-job learning. On the whole, students are taught as a year group. Qualifications consist of study units (parts of qualifications) and, depending on the ability of the student, it is possible to complete more than one unit at once. They include: compulsory basic studies and field-specific study units, some of which are optional units in specialisation studies relating to the world of work, and others are optional units decided by the VET provider (90 credits); core subject units which include both compulsory and elective studies (20 credits); free-choice study units (10 credits); and additional modules which enable students to obtain in-depth professional skills. Core subject units are designed to equip students with the 'skills and knowledge needed at work, in further studies and as citizens' (OPH, 2009) and can also include general upper secondary school units. Free-choice study units may be undertaken in the learners' own institutions or at any other upper secondary level institution. They can be vocational units, core subject units and general or interest-oriented units. A key feature of the Finnish system is

the focus on educational guidance and student counselling, specifically in relation to qualification and module choice.

The Hungarian framework is made up of both core and optional modules. School-based programmes contain one to six modules, each of which is made up of two components: the task profile, which lists the actions and work-related tasks and includes the competences required in the workplace (no performance levels are specified); and the characteristic profile which describes the suitability to perform the work-related tasks and details the required knowledge, skills and attitudes (personal, social and method competences).

Modules are all listed in the national qualifications register (OKJ), which describes the content in detail and states how many hours should be allocated and all the topics to be covered. It also includes methods of learning and teaching and the detailed content of each topic, such as a lesson plan. According to a Hungarian expert, the time allocated for each module depends on the requirements of the vocational qualification. It is possible to progress directly from a VET qualification to higher education. Apprenticeships in Hungary are also modular in structure. Students in vocational training schools can take part in apprenticeship training from age 16 onwards; this is not seen as a separate education pathway.

In Luxembourg, students are able to follow modules either sequentially or in parallel. Training elements are divided in a linear fashion into building blocks (Zinke, 2011, p. 2), which normally comprise at least two modules (MENFP, 2011, p. 17), or part-qualifications related to an area of work. Training for each building block is delivered through parallel modules (ibid., p. 18). Modules are, therefore, meaningful units of training, can be described in terms of several different competences (Euler and Frank, 2011) and have an internal cohesion (MENFP, 2011, p. 18). Different types of modules are possible, such as compulsory (blocked) and optional electives (Frank, 2011). Each is governed by a detailed module description containing information about its content, learning outcomes, method of assessment, and the responsibility for the training location.

Thematic-based, integrated learning structures are particularly evident in Poland. Here, the defining feature of modularised programmes is the integration of both theoretical and practical knowledge, in contrast to the more traditional subject-specific curricular packages that the modules have begun to replace. How programmes are structured is partly up to teachers. The EMCET-2 Leonardo da Vinci programme recommends that attitudes to vocational activity, technical bases of an occupation and basic work in an occupation should all be compulsory when designing modular programmes, while it should be up to

schools and occupations as to whether specialised work in an occupation is covered (EMCET-2, n.d.).

Portugal has also developed a flexible system which allows students to combine modules of varying lengths. The modules are structured around themes and include social and cultural modules, scientific modules, technical training and workplace training elements. All training programmes are modularised with short training units of between 25 and 50 hours. At upper secondary level learners have the option of education and training courses for young people (*cursos de educação e formação para jovens*), which give the option of finishing compulsory education with an academic and vocational qualification, in a flexible way, adjusted to the needs of the person. They can also choose vocational courses (*cursos profissionais*), which are divided into training areas and have close links with the labour market. These courses are divided into modules of varying lengths and can be combined in several ways to allow flexibility. Assessment is formative and continuous with an internal summative assessment at the end of each module. Courses are mainly school-based, but with a practical component that can be studied in the workplace. Pupils must take a vocational skills exam (PAP), which is an interdisciplinary project, assessed by the school and employers.

In Scotland, all work-related units and qualifications, including higher national certificates and diplomas (HNC/HNDs), Scottish vocational qualifications (SVQs) and modern apprenticeships, have a learning outcomes approach, use criterion-based assessment methodologies and have credit ratings linked to the SCQF. SVQs are structured into units and use outcome-based standards of performance derived from occupational standards set by sector skills councils. These awards, it can be argued, are designed to be independent of 'place, pace and mode' of study, although in practice many are taught in colleges and employer training centres. SVQ units break down an occupational role into separate functions, and are normally made up of three to five 'elements', which then break down into smaller tasks called performance criteria (Scottish Qualifications Authority website, accessed 3 August 2015⁽¹¹⁾). SVQs are awarded at levels 1 to 5, the lower levels reflecting routine tasks and the higher levels intermediate and professional activities. The level of the SVQ will determine the credit points allocated to the units it contains, which vary according to the mandatory and optional units within the qualification. Scottish modern apprenticeships give anyone over the age of 16 the opportunity to work in a paid

⁽¹¹⁾ SQA, Scottish Qualifications Authority: qualifications: SVQ: using SVQs: *Units and elements*: <http://www.sqa.org.uk/sqa/313.html> [accessed 20.8.2015].

job while undertaking workplace training to gain a recognised qualification. They are made up of SVQs plus five additional core skills units. All contain mandatory and optional units and the practical element of the qualification is assessed in the workplace (see Section 4.1 for a more detailed discussion of SVQs and modern apprenticeships).

A similar framework exists in Slovenia, where each vocational training programme comprises basic obligatory modules, mandatory elective modules and optional elective modules (Slovenian expert; Logar et al., 2007, p. 98). These modules may also include some drawn from other training programmes or specialist areas. Here, a module is understood as the smallest unit of a course of training or a qualification and its learning goals and learning content include general knowledge as well as specialised theoretical and practical knowledge. Modules therefore make it possible to acquire wide-ranging general and vocational qualifications and to specialise in one area as well. One specific aspect in Slovenia is that only 80% of the curriculum is specified at national level; the remaining 20% is flexible and can be tailored to regional and local needs (Cedefop ReferNet Slovenia, 2010, p. 29).

3.2.3. Specialisation structures

In Denmark, Germany, Italy and Austria certain training occupations can be part of a specialised modular programme. This involves the use of additional, more specialised, elements.

In Austria, training programmes are made up of three modules, which cluster the knowledge and skills required according to complexity (Archan, 2006, p. 1) and are designed to be followed in a particular sequence (Tritscher-Archan, 2009, p. 74). Over the course of four years, a modular training occupation comprises: one foundation module, with the knowledge and skills required for the basic activities of one or more training occupations in a specific occupational area; one or more main modules, acquiring the specific technical skills required for an occupation in the relevant occupational area; and one or more specialised modules that provide further in-depth skills and knowledge equivalent to what is expected of a skilled worker by way of specialist production methods or services in the relevant area (Krebs, 2008, p. 35; Pilz, 2012; Tritscher-Archan, 2009; 2010, p. 74; HLK, 2008) ⁽¹²⁾.

⁽¹²⁾ See also, Austrian legislation: Vocational Training Act: *training requirements* (Österreichische Gesetze: BAG, Berufsausbildungsgesetz: *Ausbildungsvorschriften*): <https://translate.google.gr/?ie=UTF-8&hl=en&client=tw-ob#de/en/Ausbildungsvorschriften> [accessed 19.8.2015] (in German only).

In contrast, there is no requirement in Denmark for modules to be followed sequentially. The technical and commercial IVET programmes are based on an alternating system, and are typically one third school-based and two thirds work-based. The qualifications are flexible, and are based on content covered rather than length of study. An initial modularised school-based basic course takes between 20 and 25 weeks, but can take more or less time (up to 60 weeks for the technical course) according to students' prior learning. Students are able to start modules at any point throughout the year, and can combine their studies with a range of different modules. In the basic technical course students generally choose a new module every five weeks, and the modules become increasingly more specialised as they progress. The initial basic, broad modules make way for narrower subjects which are specific to two or more VET programmes, before moving on to areas or subjects specific to a single VET qualification (with additional optional subjects also available). The alternance-based main course is also flexible in terms of duration, although it is not modularised.

In Germany, some of the training occupations are structured along the lines of emphasis and specialisation (*Fachrichtung* and *Schwerpunkt*) – up to 18 months of the training period may be devoted to training with a particular emphasis or in a particular specialisation (in most cases, two or three electives deliver the specialisation, which is reflected in the final assessment). Elective programmes can also be said to be a form of specialisation; a few training occupations are structured along the lines of elective qualifications (*Wahlqualifikationen*), which comes closest to our definition of modules. Since 1998, Germany has had training occupations in which a range of elective modules (e.g. three out of nine modules) sit alongside the compulsory components of the curriculum. These modules run for between 6 and 18 months and are geared towards the specific training being undertaken.

Specialisation is also a feature of regional IFTS courses in Italy. These are underpinned by national standards, on the basis of which the Italian regions independently organise and plan skills-based training courses. These standards also reflect the specificities of regional labour markets. In the planning and design of courses, providers and organisers are keen to achieve a balance between classroom-based, workshop-based and workplace-based training, with at least one third of training being dedicated to practical learning units in a company setting (Europäisches Berufsberatungszentrum, 2003).

3.2.4. Introductory modules

In England and Scotland introductory modules or units are offered as part of IVET prevocational education qualifications. These modules are designed to give

learners an experience of a range of linked occupational training areas and to support them in deciding which IVET qualification to undertake once they leave the upper secondary school. They provide a progression route to college or to higher vocational schools, where the learner will decide to pursue a particular specialised occupation. A common and popular example of such an introductory module is in construction. This 'taster' module is made up of learning outcomes based on painting, carpentry, electrical work and bricklaying. Introductory modules can be assigned credit in the system, although this is rarely transferred directly into subsequent more specialised occupational subjects.

3.3. Measuring the impacts

While the potential of modular and unitised systems to meet better the needs of both students and employers is apparent, so far limited attempts measured the impact of these reforms and evaluate the match between rationales and outcomes. This is particularly the case in countries that started introducing such structures in the past 15 years (Phase III countries). More and better research is needed to investigate the impacts of modularisation and unitisation overall and to assess the outcomes of pilot programmes.

Lourenço (2010) reported that the modular approach in Portugal was successful in improving the retention rate in compulsory schooling. In contrast, research from Denmark and Finland on the impact of modularisation on dropout rates, retention and student choice has pointed to some of the more adverse effects of modularisation. A learner-centred approach appears to pose challenges linked to students' ability to take responsibility for making choices and identifying learning goals.

In Denmark, where modular qualifications were introduced with inclusive aims in mind (Schreier et al., 2010a), modularisation has reportedly made the system harder to navigate for the weaker students which it intended to attract. Schreier et al. (2010a) note that new, more structured courses were introduced for weaker students in 2007, alongside mentoring schemes, increased guidance and support and modular combination courses. This was largely in response to an evaluation conducted of Reform 2000, which pointed to the challenges of modularisation for weaker students, particularly those unsure of the route they wished to take and who struggled to choose modules and decide on their own education pathways (Nieuwenhuis and Shapiro, 2004). Jorgensen (2011a) points to problems arising from the loss of stable peer groups as a result of modularisation and continuous admission. Further, research has shown that dropout rates have in fact increased (Danish Ministry of Education, 2008;

Cedefop ReferNet Denmark, 2010) and enrolment in VET has decreased in recent years, despite the introduction of modular qualifications. Finnish literature points to similar challenges for students who are expected to make choices about their education at earlier points in time and to take responsibility for the order and pace of their learning (OECD, 2010a). Thus, in several countries there is also an emerging focus on student career guidance and counselling to help ensure they make the right choices for the individual learning pathway.

In Germany, the JobStarter Connect pilot and the elective programmes were evaluated. The interim evaluation of the JobStarter Connect pilot reported good rates of transition for learners moving into the dual system. However, transition into the dual system requires training building block qualifications from Jobstarter Connect pilots to be recognised. The recognition of training building blocks is decided on a case-by-case basis and varies depending on the chamber. Consequently, the training building blocks are not always recognised and sometimes learners have to restart the training in the dual system (Interval, 2011, p. 77).

Most elective programmes integrated in the German dual system have not yet been evaluated. However, there is some evidence as to the impact of electives in the laboratory technician occupations (*Laborberufe*) and in the vocational occupation 'insurance management assistant' (*Kaufmann/Kauffrau für Versicherung*). Evidence shows that electives allow companies to adjust training better to their needs, and that they increasingly consider learners' interests. Conversely, evidence suggests that training companies could respond better to changes in the workplace. On the other hand, electives were also said to contribute to increased costs for examinations and cooperation between training companies and vocational schools. Crucially, it is not possible for every elective to be provided in every training company (Stör et al., 2007, pp. 32-33; Frank and Gottwald, 2011, pp. 67-68).

3.4. Links to ECVET implementation

Modules can be defined as components of education and training programmes, while units are a set of learning outcomes which constitute a coherent part of a qualification. A unit can be specific to a single qualification or common to several qualifications. In terms of European credit transfer system for VET (ECVET), units can be assessed and validated. They form therefore the building blocks of any credit system as they allow for discrete clusters of learning outcomes to be assessed and accredited within IVET. This chapter briefly examines the links

between unitisation/modularisation and ECVET implementation using some examples from the countries in the study.

However, ECVET is just one of the tools or instruments to encourage learner mobility and certification across the EU Member States. It is also a relatively new initiative. Nonetheless, there is evidence of ECVET having an impact in several countries, particularly in those which adopted modular and unitised structures at an early point on the timeline (Section 2.1).

ECVET has two main objectives (Cedefop, 2010a) – first, the transfer of assessed learning from a stay abroad and, second, allowing learners to build up a qualification from gaining credit in several countries. This function is normally predicated on several factors: existence of learning outcomes, modular and unitised structures and a credit transfer system.

The picture that emerges from the study is that the extent to which modularisation and unitisation are applied to the IVET system in a particular country can be a factor when it comes to a country's receptiveness for ECVET. Where modular and unitised structures have been applied only to some qualifications or to specific parts of qualifications, such as in Denmark, Germany, France, Italy and Austria, this may restrict the opportunities for introducing ECVET and encouraging mobility and credit transfer. The study found little evidence of ECVET implementation in those countries that represent traditional forms of VET, for instance those that have built their VET systems on the *Berufskonzept* model. Here, as in the case of Germany, it is more likely that experimentation with unitisation structures will be at the margins of training occupations and confined to the needs of employers for specialisation and engaging disadvantaged student groups. DECVET, the German adaption of ECVET, has been tested in several feasibility projects but is not yet widely used.

On the other hand, countries that have modular and unitised qualifications in place across the whole IVET system (e.g. England, Finland, Hungary, Luxembourg, the Netherlands, Portugal, Scotland and Slovenia) are more likely to implement ECVET within their respective IVET systems. For example, a comparatively high proportion of Finnish students (13%) go abroad to undertake part of their vocational qualification. As such, it is unsurprising that Finnish VET is described as being 'ECVET friendly' (CIMO, 2010).

The stage of development of modular and unitised structures in a country may also have a bearing on how ECVET is implemented. Early adopters of modularisation and unitisation practices (such as England, the Netherlands and Scotland) are more likely to be in a state of 'readiness' for ECVET. This point is illustrated with two examples, from Scotland and the Netherlands respectively, in Boxes 1 and 2.

Box 1. Developing ECVET in a Scottish college

The research team spoke to a representative from a college which is currently actively working with ECVET in Scotland. The college has developed and piloted an ECVET module along with European partners, which will eventually be assessed by host partners. The interviewee noted that this might be problematic because most other EU countries do not have a credit-based and unitised system and do not yet have national qualifications frameworks in place. She was of the opinion that ECVET will 'definitely help promote mobility in the future', because of its focus on accreditation of learning outcomes. She also suggested that ECVET will help other countries to promote national qualifications frameworks and encourage them to build these into their systems. She is delighted that ECVET has been introduced as it allows accreditation for work placements done abroad, 'which is what mobility is all about'. It helps promote what the college has wanted all along, which is that learning can be done all over Europe and that it can be accredited. The interviewee also suggested that it is easier for Scotland because its credit-based unitised system means there is a framework to refer to, and hoped that ECVET will promote awareness of mobility in the future.

Source: Cedefop (2013b).

Box 2. ECVET activity in the Netherlands

Although ECVET is not yet implemented in the Netherlands, pilots are under way at both national and school levels. They are directly related to mobility, include the development of ECVET modules and explore issues related to accreditation. It is anticipated that the new qualification format will enable the Netherlands to be better aligned with European recommendations and with the language of EQF and NLQF (Dutch national qualifications framework). These changes have been prompted by a desire to reduce and combine qualifications and to make them more flexible. An indirect result of the changes is that it will be easier to relate ECVET to the new qualifications. The new qualification structure will introduce optional 'choice modules' to VET and will make it possible to implement ECVET in the 'choice module' for specific occupations, particularly where this might be an area of interest for a specific occupational area or sector, such as trade or tourism. There are currently ECVET pilots on EU mobility which may develop choice modules in transport and logistics. The government has developed the new system so that it is possible, rather than obligatory, to do this and it is up to the labour market and education providers to decide whether there is a demand for this in the system.

Source: Cedefop (2013b).

Interestingly, late adopters of unitisation structures may also be in a good position to implement ECVET given that, as in Latvia, they have the opportunity to make a system-wide intervention in IVET in response to EU policy.

EU countries may be at different stages in the development of modular and unitised structures, and thus at different stages of 'preparedness' for ECVET. But there is little doubt that the continued growth of modular and unitised structures is providing a bedrock for future ECVET implementation, given their role as building blocks to which credit value can be attached.

CHAPTER 4.

Case study

This final part presents a more in-depth analysis of modular and unitised structures in three countries.

The case study countries are Germany, the Netherlands and Scotland, which all have a marked history of modularisation approaches. They represent different models from across the modularisation spectrum (Section 2.1), ranging from the traditional, holistic training in Germany (*Berufskonzept*) to a moderate form of modularisation in the Netherlands and to the more radical modularisation model present in Scotland.

Six occupational areas were explored (automotive; butchery; financial services; hairdressing; retail; and warehousing and logistics), of which the hairdressing qualifications are presented in this paper. Despite the fact that each country has its own distinct initial vocational education and training (IVET) system, there are strong similarities between the German, Dutch and Scottish qualifications.

The first section in this part provides contextual information about qualifications in the three countries, followed by an analysis framework for the case studies, pointing to the key areas of interest relating to modularisation and unitisation. Finally, the hairdressing qualifications are explored in detail.

4.1. Contextual information about the case study countries

In selecting qualifications in the three countries, the focus was on IVET, hence the emphasis on lower level qualifications in the Netherlands and Scotland. Had higher level qualifications been chosen, such as higher national certificates or diplomas in Scotland, then the illustrations provided here may have looked somewhat different.

4.1.1. IVET in Germany

As outlined in Section 2.1, Germany represents the traditional, holistic concept of apprenticeship training. Modularisation can be found in two distinct programmes in the German system: electives (*Wahlqualifikationen*), which are integrated in the normal dual system, and training building blocks (*Ausbildungsbausteine*). It is these two aspects that have been the focus in the case studies. They do not

represent the norm for vocational training, but rather the most flexible forms of IVET in Germany, apart from purely regional projects.

Electives are available in a few training occupations (*Ausbildungsberufe*)⁽¹³⁾, and provide for an element of choice within a programme, as the lowest level or smallest part in both time and content. They are an example of specialisation structures in that they allow training companies to select and combine specific skills areas, reflecting their own situation, profile and needs, and to make use of their own resources when training future employees. Learners follow the traditional dual system before selecting a specified number from a range of electives, halfway through their training period or in their final year of training. Electives may account for no more than one third of the training period. There is also the option for learners to take additional electives (*Zusatzqualifikation*) over and above the standard curriculum, as supplementary and individually certified skills training. The locations in which electives are taught vary from occupation to occupation. They are assessed in the final examination at the end of the training period; depending on the occupation, just one elective or more may be covered in the final examination. For example, in retail only two of the three chosen electives are assessed in the final examination.

Training building blocks (*Ausbildungsbausteine*) have been trialled in several training occupations in Germany since 2008. The JobStarter Connect programme has implemented the training building block approach with a view to integrating young people in the dual system. It is targeted at former applicants who had previously applied for a training post and unskilled young adults and employees who wish to acquire vocational training. The current programme has run from 2008 to 2015 across the country, offering training building blocks in parallel to the normal dual system. Learners can complete the whole training via building blocks or may switch to the dual system. The training framework is subdivided into seven or more (depending on the training occupation) individually certified building blocks. They are output-oriented and assessed on the basis of competences. Training building blocks can be offered by a range of training providers, depending on the mode of delivery. There are four different modes:

- (a) skills training for former applicants to prepare them for employment;
- (b) skills training with a view to equipping young people to access in-company training;

⁽¹³⁾ Training occupations provide vocational skills, knowledge and abilities, which are necessary to conduct a qualified vocation in a changing working environment. Training occupations are organised by regulated learning processes (BMBF, 2005, p. 5).

- (c) interface between initial vocational education in schools and vocational training in companies;
- (d) 'return to learn' training (*Nachqualifizierung*) for young adults without a vocational degree.

The intention behind the first and fourth modes is to identify and record vocational competences that young people may have already acquired. This opens up individual paths to skills training and qualifications that can be followed at a range of learning locations: the aim is to involve not only companies but also (vocational) schools and other educational and training institutions. The overarching goal is for participants to gain access to company training at an earlier stage and acquire certification in their chosen occupation. The intention behind the second and third modes is to trial the building block approach in either training institutions or vocational schools, to facilitate access for young people to training in the dual system and help them achieve a recognised qualification.

With the exception of the 'return to learn' training mode, training building blocks are taught in a predetermined sequence – divergence from this sequence is possible only in exceptional cases – and the training is linked with a learning process.

4.1.2. IVET in the Netherlands

At upper secondary level, Dutch IVET qualifications consist of the MBO diploma (*middelbaar beroepsonderwijs*). This is usually undertaken by students who have completed their VMBO (*voorbereidend middelbaar beroepsonderwijs*), or. The MBO consists of four levels:

- (a) level 1: assistant training/assistant under supervision. 0.5-1 year (EQF 1);
- (b) level 2: basic vocational training/basic skilled worker. 2-3 years (EQF 2);
- (c) level 3: professional training/all-round skilled worker. 2-4 years (EQF 3);
- (d) level 4: middle-management training/specialist skilled worker or middle manager. 3-4 years (EQF 4).

It is possible to progress from one level to another and students who have achieved level 4 are able to progress further into higher education. Level 1 is aimed predominantly at lower ability students and those for whom Dutch is not their first language. From level 2 onwards, most qualifications require entrants to have VMBO diplomas. It is possible to go straight into levels 2, 3 or 4 – depending on the particular qualification area.

The Dutch IVET system consists of two routes, both of which lead to the same MBO diploma. The work-based route is known as the BBL (*beroepsbegeleidende leerweg* – apprenticeship training). Here, students do about 60-80% of the course on the job, with the remainder in school. The school-

based route is known as BOL (*beroepsopleidende leerweg* – vocational secondary education), and students undertake between 20% and 60% of their training on the job.

While the system was previously highly modularised, there are now no modules as such, at national level. Qualifications are now made up of core tasks (*kerntaken*), work processes and competences. The Netherlands was one of the first countries to move towards a competence-based system, although the understanding of competences differs somewhat to the rest of Europe, in that it relates to knowledge, skills and attitude. Qualifications consist of a mandatory structure – students must complete all core tasks and work processes and there are no optional elements. Depending on the school, the core tasks may be individually certificated, but even if they are, they are generally not recognised in the labour market and have no credit attached.

Schools have a great deal of autonomy in the Netherlands and are able to decide how they structure programmes. Some programmes are based on core tasks, while others use modules. Interviewees in the study tended to see the core tasks as being modular in concept. There is a distinction between modules at national level and at school level, and the terms modules and units were both used, often interchangeably.

IVET qualification structures and formats are being revised, with a new format planned for implementation across all VET qualifications. This is designed to reduce the number of available qualifications by combining those with similar features, and adding optional elements for more specialised areas. This will lead to a more flexible system and will continue to be structured along modular lines in the form of core tasks, work processes and competences. Recent years have seen debates held about the importance of knowledge versus skills and technical competences and it is anticipated that knowledge will again play a greater role in the new qualification format.

4.1.3. IVET in Scotland

IVET programmes in Scotland are available to those who have completed four years of secondary education and are aged 16 or older. These modularised qualifications are either national certificates (NC) or Scottish vocational qualifications (SVQ), and the main awarding bodies are City and Guilds and the Scottish Qualifications Authority (SQA).

The Scottish qualifications under consideration in the case studies are delivered as SVQ level 2 qualifications. They are at SCQF 5 on the Scottish credit and qualifications framework and EQF 3. These qualifications are known as group awards and are made up of several units, some mandatory and some

optional. Individual units are made up of 'elements' (learning outcomes) which provide details about the standards of competence required for that area of work. No specific training programme or mode of study is specified in the SVQ qualification, so it can be delivered in a flexible way, at a college or workplace, as long as the student is assessed in a work environment.

All qualifications (up to degree level) achieved at school, college or in the workplace are recorded on a Scottish qualifications certificate (SQC). This includes the certificate gained for the SVQ and a summary of attainment, which lists all awards, courses and units achieved and their SCQF level. Credit points are given for individual units (at a nominal one credit point per 10 hours of study) but not for an award or course.

With regard to the case study occupational areas, most students were undertaking the SVQ 2 as part of their modern apprenticeship training with an employer, while others were taking a college-based qualification. Most programmes we studied were two years in length; however a modern apprenticeship can last from one to more than three years and can be taken at levels 2, 3 or 4, depending on the appropriate level of the SVQ awarded. The level of the qualification will depend on the demands of each vocational sector. For most industries, the SVQ 3 would be the appropriate modern apprenticeship qualification. In addition to the SVQ, a learner working towards a modern apprenticeship would also be required to take five additional core skills units: communication, numeracy, ICT, working with others and problem solving.

4.2. Comparative overview of modularisation in the case study countries

This section presents an initial, high-level, comparison of modularisation in the German, Dutch and Scottish IVET systems, focusing on areas of similarity and divergence, as well as the analytical framework used to explore qualifications in the three countries.

As already mentioned, Germany, the Netherlands and Scotland were selected partly because they represent different forms of modularisation. However, readers should be mindful of the fact that the case studies present a 'snapshot' view of qualifications in the three countries: the information is based on the responses of specific interviewees at a particular moment in time, and should therefore not be considered representative. The following caveats should be noted:

- (a) In Germany, the training building blocks (JobStarter Connect programmes) are distinct from the traditional dual apprenticeship system and represent

- pilot forms of modularisation, while the elective approach is integrated in the dual system;
- (b) in the Netherlands, the system is in a state of flux preparing for new qualification structures to be implemented, which will bring greater flexibility. For the purposes of the case studies, we have concentrated on describing the current system, but have, where relevant, pointed to differences under the new system;
 - (c) in Scotland, while SVQs are a stand-alone qualification, they are also part of a wider qualification in modern apprenticeships. It is important to bear this in mind, particularly when comparing the duration of qualifications in the three countries;
 - (d) additionally, as we focused on IVET, it was not possible to find similar qualifications in the three countries that were rated with the same European qualifications framework (EQF) levels. This can be explained by content, duration of study and breadth of study. That there was such variation in the levels of IVET qualifications between the three countries can, however, be seen as a significant finding in itself.

Table 4 provides a comparative overview of the three IVET systems and the analytical framework used to explore the qualifications in the three countries.

Table 4. **Comparative overview of the three IVET systems, highlighting the analytical framework for the case studies**

	Germany	Netherlands	Scotland
Types of qualification under consideration	Elective qualifications (<i>Wahlqualifikationen</i>) Training building blocks (<i>Ausbildungsbausteine</i>)	MBO diplomas	SVQs modern apprenticeships
Forms of modularisation	Only the pilot training building blocks and elective programmes are modular in form. Most IVET under the dual system is traditional holistic training.	Combination of both forms of modularisation	Radical form of modularisation
School-, college- or dual-based system	Electives: predominantly dual system Training building blocks: wide variety of schools and training providers, e.g. vocational schools, companies and private training providers	Work-based (BBL) School-/college-based (BOL)	College and work-based
Terminology	Electives Training building blocks	Core tasks and work processes, and, in some cases, modules	Units, broken down into elements (learning outcomes) and performance criteria

	Germany	Netherlands	Scotland
Input- or output-based	Pilots (training building blocks) are competence and output-based	Competence-based	Competence-based
Basic structures	Elective programmes: specialisation Training building blocks: mandatory	Mandatory: core tasks, broken down into work processes and associated competences	Core and elective: combination of core and optional units, broken down into elements (work processes)
Individually certified?	Electives are not individually certified. Each building block is individually documented by the training provider, but no credit is attached. Recognition depends on the chamber of trade and industry.	Up to schools to decide whether individually certified, but no credit is attached and not recognised by the labour market	Individually certified, credit-based units. Group award made up of credit-based units.
Partial qualifications?	No partial qualifications	No partial qualifications	No, but each student has a record of attainment for every unit for the purpose of internal administration
Level of student flexibility	No student flexibility	Currently no student flexibility, but plans to introduce this	Some flexibility for the student
Responsiveness to employers' needs	Responsive to the needs of employers	Responsive to the needs of employers	Responsive to the needs of employers
Potential for credit transfer	No possibilities for transfer	Transfer is possible in some cases, but it would be up to schools to decide	Possibilities for transfer available; subject to funding
Recognition of prior learning	Not possible	At the discretion of schools	System is in place for this, but not widely used
Movement in and out of training	Training building blocks and electives: there are no options to do so freely, with certain exceptions	Generally possible – at the discretion of schools	Possible – dependent on funding
Potential for progression	No progression possible in the context of modularisation. Once learners finish the training by building blocks, they have the same possibilities for further training as graduates from the dual system.	Progression embedded in the qualification structure, subject to funding	Discretionary progression system in place, subject to funding
EU mobility and ECVET	A few feasibility projects are running. ECVET is not currently widely used at a practitioner level.	System in place for this. Changes have been made but at a broader level for flexibility in the widest sense.	Some evidence of mobility, though not under the formal auspices of ECVET

Source: Cedefop (2013b).

A key finding from the study is how pervasive modularisation and moves towards greater flexibility have become across Europe. Both Germany (with its pilot Jobstarter Connect programmes) and the Netherlands (with forthcoming changes to the qualification format) are moving towards more modular and flexible qualification structures.

The qualifications explored in the case studies were generally felt to respond well to the needs of employers in the three countries. In Germany, interviewees commented on how electives meet companies' interests as they are able to adapt the electives to suit their own specific situation. However, German interviewees also noted that companies are sceptical of the training building blocks, and that some associations actually warn member companies against having anything to do with them. Therefore, not all training building blocks are recognised by training companies and chambers of commerce and industry, which can limit participants' mobility. However, the certification obtained by learners at the end of the programme is equivalent to that obtained in the dual system.

In the Netherlands, interviewees noted that core task descriptors are written in such a way as to easily incorporate changes in the labour market. A social partner in the field of warehousing and logistics explained that the descriptions are written at a generic level, so that they do not have to be updated to include new innovations. This was described as a 'sustainable' way of updating the qualification.

In Scotland, optional units within SVQs and modern apprenticeships tend to relate well to the needs of employers and learners are often encouraged to select those units which will most relate to their employers' specialities. Scottish interviewees in the warehousing and logistic field noted how recent revisions to the qualifications have made them more responsive as they are driven by the needs of employers and the sector skills councils.

Across the three countries, learners have little or no choice in structuring their qualifications. In both Germany and the Netherlands, qualifications are structured along mandatory lines and learners are required to complete all parts as stipulated either by the employer or the vocational school. In Scotland, which is potentially the most flexible system due to its core and optional credit-based units, students theoretically have a choice in terms of the elective units, but in reality the decision is taken by a trainer or college lecturer.

The duration of programmes is one area of flexibility. In both the Netherlands and Scotland, it is possible to complete programmes in more or less time than the recommended duration. This, then, is an example of where programmes can be tailored to the needs of individual students.

Partial qualifications were not widely used in the three countries. Interviewees noted that such qualifications tended to have little worth on the labour market and as such, there was very little demand for them. The Netherlands has certifiable units, which are additional individually certified units, but they do not apply to all sectors.

The three countries represent different types of basic structures in qualifications. In Germany, the qualifications considered are based on specialisation (elective programmes) and mandatory (training building block programmes) structures. A mandatory structure is currently used in the Netherlands. While the qualifications themselves are already fairly specialised, the number of individual qualifications will be further reduced and the country will move towards a system based more on core and elective structures. In Scotland, different programmes may share similar core units but then offer specialisation by means of large array of optional units.

While qualifications in all three countries are based on competences (to varying degrees), Scotland is the only country which has a credit-based, unitised system. This can be seen to impact on the extent to which credit transfer is possible. There is evidence that movement between institutions and programmes or sectors within the same institution is easier in Scotland. In Germany and the Netherlands the systems are not based on credits, which can act as a barrier to transfer. This is particularly the case in the Netherlands, where decisions about credit transfer and recognition of prior learning are at the discretion of schools. Interviewees in the Netherlands also pointed to similar issues with regard to the implementation of the European credit transfer system for VET (ECVET). Progression and the extent to which European mobility and ECVET have been implemented can also be said to vary across the three countries.

4.3. **Hairdressing qualifications in Germany, the Netherlands and Scotland**

The hairdressing qualifications under consideration are: electives in hairdressing (EQF level 4) in Germany; junior hairdresser MBO level 2 (EQF level 2) in the Netherlands; and hairdressing SVQ level 2 (EQF level 3) in Scotland. Despite the fact that each country has its own distinct IVET system, there are strong similarities between these qualifications in the three countries. Table 5 provides further information on each of them.

Table 5. Comparison of hairdressing qualifications in Germany, the Netherlands and Scotland

	Germany	Netherlands	Scotland
Title of qualification	Hairdressing (<i>Friseur/in</i>) – the electives in this qualification are considered here	Junior hairdresser MBO level 2 (<i>Junior Kapper</i>)	Hairdressing SVQ level 2
EQF level	4	2	3
Terminology	Electives	Core tasks	Units
Duration	3 years	2 years	2 years
Date last updated	The electives were introduced in 2008	Updated almost annually	Revised regularly
School, college or dual-based system	Work-based dual system, but electives are taught in the training company	BOL college-based	College-based, but can also be work-based
Structures	Specialisation: single elective during second half of training	Mandatory: three core tasks, work processes and competences	Core and electives: eight mandatory units and one optional (chosen from six)
Specific structures	One of five electives is chosen by the employer and is undertaken by the learner during the second half of training. This takes eight weeks to complete. • care, cosmetics and make-up • dressing long hair • nail design and modelling • wigs and toupees • colouring	Core-task 1: • cutting the hair with scissors and razors; • receiving the client and making an appointment; • planning the treatment; • taking care of the hair and the scalp; • cutting and shaving. Core-task 2: • styling the hair; • planning the treatment; • cutting long hair (level 3 only); • blow drying and styling; • temporary styling; • permanent styling; • relaxing hair (level 3 only); • weaving (level 3 only); • selling products and services and advising the client. Core-task 3:	Mandatory units: • making sure student's actions reduce risks to health and safety; • giving clients a positive impression of oneself and the organisation (SCQF credit 6); • advising and consulting with clients (SCQF credit 3); • shampooing, conditioning and treating the scalp (SCQF credit 4); • changing hair colour (SCQF credit 11); • styling and finishing hair (SCQF credit 6); • setting and dressing hair (SCQF credit 6); • cutting hair using basic techniques (SCQF credit 8). Optional units: • fulfilling salon reception duties (SCQF credit 3) • promoting additional services or products to clients (SCQF credit 6);

	Germany	Netherlands	Scotland
		• colouring the hair; • planning the treatment; • colouring; • treatment completion and updating records. Plus Dutch, maths, citizenship and ICT	• developing and maintaining effectiveness at work (SCQF credit 3); • plaiting and twisting hair (SCQF credit 4); • perming and neutralising hair (SCQF credit 8); • attaching hair to enhance a style (SCQF credit 3).
Order/sequence	Electives selected at the start of the training, after which it is difficult to make changes. Undertaken at end of training, but sometimes companies are more flexible with the timing of the elective.	Order determined by the school	Order determined by the college, in consultation with employers. Units are usually integrated.

Source: Cedefop (2013b).

In Scotland and the Netherlands, the two hairdressing qualifications are taught in school/college (known as BOL in the Netherlands) but often through the use of near work environments, such as salons and teaching classrooms, and with one day a week working in salons. In Germany, hairdressing electives are taught in companies, as they were introduced to enable companies to tailor training programmes to their own equipment and specialisation. One of five electives is chosen and is normally taught in the last 18 months of training. In practice, however, training is more flexible and is usually delivered when it is feasible for the company to do so (workload, staffing and equipment, time available). The timing will also depend on the progress the apprentice has made at various stages.

In the Netherlands, flexibility is most evident in terms of the freedom given to the schools delivering vocational training. How students learn differs from one school to another. While this enables regional preferences to be incorporated into training, it is sometimes considered unhelpful in terms of standardisation, which is necessary for learners' employability.

The interviewee explained that the Ministry of Education is exploring ways to 'limit the boundaries' for schools, reduce their freedom and make guidelines clearer. While there is no flexibility for students as the system currently stands, it will be possible under the new system for students to choose 'units' (also referred to as 'modules' by another Dutch interviewee).

In the Scottish hairdressing qualification, the SVQ level 2 is predominantly made up of mandatory units (eight out of nine). This is comparable to Germany, where learners select only one of five electives, and the Netherlands, where the whole programme is mandatory. The SVQ level 2 is taught over two years and the nine units (four in the first year and five in the second year) form a group award in hairdressing. As in Germany, Scottish students did not have any real choice over the optional unit. Bundles of competences are put together to form learning outcomes and three to five learning outcomes will form a unit. The awarding bodies (SQA and City and Guilds) agree the competences for each unit with the Hair and Beauty Industry Authority (HABIA), which is the government-approved body responsible for setting standards. Centres can teach the units in any sequence, but they are usually taught in an integrated way, with theory and skills being taught together. Even theory, for example health and safety, has to be demonstrated, rather than just examined in writing.

German interviewees emphasised that mobility is underpinned by the strong sense of occupational identity and practical approach that typify the German education and training system and does not necessarily depend on the electives offered. Mobility in the Netherlands is somewhat constrained by the schools, as they determine whether a student should be offered recognition of prior learning and how this might be done. They would also decide whether each core task

should be individually certified; most would only offer a diploma at the end and nothing else.

Similar issues affect the German hairdressing elective, whereby movement in and out of the qualification would only be allowed as an exception. In some cases the learner must start their training all over again. In Germany, decisions on the recognition of prior learning require the approval of the training company, the vocational school and the chamber of trade and industry. On rare occasions and under certain circumstances, training may be shortened by between 6 and 12 months. There is recognition of prior experiential learning in Scotland, which allows for students with relevant experience to progress to a higher-level course or to miss out units which have already been achieved, if the timetable allows for this. Usually this would be done in the form of 'assessment on demand' rather than recognition of prior learning.

Partial qualifications are generally not used in Germany. However, it is possible to obtain a 'junior journeyman's certificate' (*kleiner Gesellenbrief*), which may be awarded to any learner who has taken the final examination three times and passed the practical part but not the theoretical part. Former learners with this qualification are placed in a different wage group. There is virtually no demand for learners with partial qualifications in any of the three countries. In the Netherlands, it is possible for those working in some of the larger companies to obtain additional specialised units in hairdressing. However, they are specialised according to the needs of those employers and so are often not transferable to other companies, due to different processes and products. There is no real value given to individual units in the Scottish labour market either; most employers are looking for fully qualified staff, otherwise they have to pay for their training. Some students do leave after a year and the employer might allow them to finish the award in-house but this is not encouraged.

There are four levels to the Dutch hairdressing MBO diploma, each of which is a stand-alone qualification. Progression is, then, built into the qualification structure. Under the new system, progression to further levels will be curtailed due to funding restraints.

Funding arrangements also act as a barrier in relation to mobility and credit transfer under the Dutch system, particularly with regard to movement between institutions. This is technically possible but in reality rarely happens because schools are funded according to the number of students who pass their diploma and therefore there is an incentive to encourage students to remain rather than to move between courses or sectors. Funding is also an issue for mobility and credit transfer in Scotland. Units are usually combined in a flexible way but the funding is delivered as 'milestone payments' when regular progress reviews are completed. Students must complete a unit in three months to meet the milestone target and must complete all units for the training provider to access full funding.

At pan-European level, some progress has been made in recent years in terms of developing a European hairdressing certificate (level B) to complement the European hairdressing certificate (level A) pertaining to national hairdressers' diplomas issued by national authorities or training bodies. This was updated by the EUC Hair project, which was funded through Leonardo da Vinci and concluded in 2006. The project aimed 'to establish a transnational system for mutual recognition transnationally of hairdressers' competencies' (EUC Hair, 2006 in Cedefop, 2012b). In 2007, social partners from the hairdressing sector across Europe agreed to implement certificates for three levels to 'improve the overall quality and image of the hairdressing services in the EU, and to facilitate flexibility and mobility through better transparency and comparability of skills' (Uni Europa Hair and Beauty and Coiffure EU, 2007).

Despite the progress outlined above, the European Hairdressing Certificate (level B) was not mentioned by the case study interviewees. However, some examples of European mobility in Scotland were found, as detailed in Box 3.

Box 3. European mobility in a Scottish college

A range of different disciplines are involved with European mobility projects in the college, including sport, beauty therapy, care, hospitality and hairdressing. Students undertaking the national certificate in hairdressing are sent abroad to carry out part of their work placements. This is done through Leonardo da Vinci programmes. For the past four years, the college has been sending small numbers of hairdressing students to Malta and, more recently, Spain and it also hosts hairdressing students from Ireland. Students visited Malta to work in the salons of a multinational company. In Spain, students are given the opportunity to experience a range of placements over a two-week period. As the students do two-week placements abroad, this can only contribute to part of their work placement unit as more hours than this are required to complete it – the remainder would be undertaken in Scotland. The interviewee stated that the experience 'can be life changing' for some students; some have been offered jobs with salons in their host countries, while others benefit from cultural visits and learning a foreign language. Students tend to receive very good references from their work placements abroad and this has benefits for them back home. The host countries do not yet assess students in their work placements, and therefore tutors go out to the host countries with their students and it is they who do the assessment. The college is actively working with ECVET in areas other than hairdressing. As a partner in a STEMS transfer of innovation project, it is currently developing a sports module in 'prejudice, stereotype and discrimination in sport', and has already piloted part of the module with sports groups in Italy. This will eventually be assessed by host partners. The interviewee indicated that this is problematic as most other EU countries do not have a credit-based and unitised system and do not yet have frameworks in place.

Source: Cedefop (2013b).

CHAPTER 5.

Conclusions and policy messages

This final section outlines the main conclusions and policy messages of the study. The key strengths and weaknesses associated with modularisation and unitisation are first highlighted, as identified in the literature and by research participants.

Modularisation provides flexibility for employers to train their workforce in skills which suit their needs and it allows qualifications to respond quickly to changes in the world of work – for example in terms of technological developments. At the same time, in some cases it allows learners the flexibility to select courses and competences that are of interest to them. Modularisation provides greater opportunities for learners to move in and out of the initial vocational education and training (IVET) system, as well as some options for recognition of prior learning and progression inside the vocational education and training (VET) system. It also makes it easier to shape courses by provision for different learning groups (e.g. by duration) and entails more options for collaboration between training providers in terms of delivering combined programmes from different providers. The step-by-step certification provided by some forms of modularisation has the potential to reduce dropout rates due to regular assessment (e.g. through the feedback provided during assessment or by allowing students to see their progress or achievements throughout a course of study).

However, in some countries at least, there are fears that learners will leave the system with only partial qualifications that are not necessarily needed or recognised by the labour market. There are also concerns that flexible structures can be difficult to understand for the various groups involved due to lack of transparency, which points to a need for information and guidance for both learners and employers. Also, provider-led educational markets designed around outcome-based funding can restrict student flexibility and mobility.

While such benefits and concerns were identified by research participants and much of the literature, limited evidence was found of actions to evaluate or measure the actual impact of modularisation and unitisation practices. One of the key messages from the study is that more and better research is needed to investigate the impacts of modularisation and unitisation overall and to assess the outcomes of pilot programmes.

5.1. Study findings

Modularisation and unitisation practices vary greatly across the 15 countries. Due to different training cultures in IVET, it was to be expected that the aims, modes, structures and procedures of modularisation and unitisation would differ. It has also been found – which was perhaps less expected – that there is extensive coverage of modules and units in IVET qualifications across the countries in the study. In many ways what has occurred could be described as a ‘quiet revolution’ in the expansion of modular structures within vocational qualifications. This growth has been sustained over time with the support of the EU and related agencies.

However, while in some countries modular and unitised structures have been implemented system wide, in others they affect only distinct parts of the IVET provision. Also, different countries are at different stages of development in the use of modularised structures, which creates an opportunity for learning through knowledge exchange across the EU between ‘early adopters’ and ‘late developers’.

In terms of definitions and terminology, there is a certain lack of clarity in relation to concepts of modularity and unitisation among country experts, social partners or practitioners. Many tended to use the terms ‘modules’ and ‘units’ interchangeably and few had an understanding of these concepts that matched that of the Cedefop definitions. In particular, awareness of unitisation concepts was low among study participants.

The growth in modularisation and unitisation has been largely driven by stakeholder needs. The demand for greater flexibility and responsiveness to the needs of employers and the labour market has been one of the main drivers for change. Modular qualifications are easier to update to incorporate changes in legislation, new technologies or new ways of working, by replacing or updating individual modules when needed.

Student choice and individualisation is also a factor in the move towards modularised programmes; however, in none of the countries in the study do students have an entirely free choice. There are differences between the levels of flexibility on offer in theory and those available in practice. Even where there is individualisation, students have to choose from set lists, which are often selected in practice by employers or training providers, and free choice elements tend to represent just a small part of the overall qualification. However, flexibility is available in terms of: the duration of programmes, which could be longer or shorter depending on students’ ability; multiple entrance points; and flexible assessment.

Other key factors which have contributed to the move towards modularisation and unitisation include a desire to make VET more attractive and raise its status; increase participation rates and reduce early dropout (often targeted at particular groups); create mobility between VET pathways; and make the VET system more transparent.

In principle, the implementation of modular and unitised structures allows for greater flexibility in the system. This is indeed the case for employer groups that appear to take full advantage of the flexible provision afforded by more specialised forms of modularisation. The providers of modular-based qualifications also exercise control over the mix of modules and units in any qualification. In some countries, devolved structures of governance and 'bottom up' decision-making allow enormous scope for providers to plan and implement modular structures of learning.

The structures of modularisation adopted in the countries are varied and typically respond to local needs. The four main types of modular structures are: mandatory; core and elective; specialisation; and introductory modules. It is reasonable to claim that particular countries have a preference for particular types of module and unit structures, reflecting largely historical and cultural differences. For instance, Germany and Austria make more use of mandatory and specialisation structures, while the UK has a preference for core and elective structures reflecting a high degree of responsiveness to diverse employer needs. The decision to adopt a particular structure also depends on the stage of development of modularisation in a country. In the Netherlands, for example, there is a movement towards using more optional modular structures in a devolved institutional infrastructure, based on social partnerships. Countries newer to the notion of modularity and unitisation, such as Latvia, are more likely to adopt a comprehensive system-wide approach to modularisation based on past experiences of a range of EU countries.

The spectrum of different forms of modularisation and unitisation across the 15 countries in the study reflects a wide range of practices linked to the needs of particular stakeholders. Although the debate about modularisation has often been polarised between the more traditional and more radical structures, in practice most countries have adopted a combination of both forms. Even those countries that have resisted moves to modular forms of learning and accreditation have still been willing to experiment with different forms of modularisation with particular employers or student groups. Similarly, those countries that have adopted radical forms of unitisation have not always implemented comprehensive and permeable credit transfer systems between different IVET qualifications. In fact, it is difficult to argue that the ideal radical form of modular structure actually exists in practice.

The case studies show that despite variations between the IVET systems, there is a high degree of similarity between German, Dutch and Scottish qualifications. Mobility and recognition of prior learning are aspects that stakeholders are aware of, but that play only a very limited role in practice. Based on the data from the case studies, there is little widespread use of credit transfer arrangements. This is somewhat surprising given the extensive use of modular and unitised structures, which form the building blocks of any credit system and would allow for discrete clusters of learning outcomes to be assessed and accredited. In a number of countries this can be explained by the reluctance to attach a credit value to individual modules and units. However, in other countries with credit-based modular and unit systems there is little credit transfer taking place in practice. According to some of the interviewees, this is related to the funding regimes in place that emphasise completion rather than progression. This resulted in providers being reluctant both to take students on to a modular programme part way through the qualification and to allow them to progress on to other qualifications before completing the provider's programme. Credit-based funding by public authorities may therefore act as a significant barrier to progression in modular and unitised qualifications.

Most countries in the study had well-established articulation agreements in place to ensure seamless progression from modular-based school/college programmes to higher education. Normally students would progress to technical and vocational higher education qualifications. However, some countries still have no formal systems in place to ensure that vocational education students can, if qualified, automatically progress to higher education. Often these are countries where there are institutional and political barriers in place. The removal of these artificial barriers to student progression should be seen as a priority issue to be addressed in the EU.

Few examples of the use of ECVET were found in the study countries. However, this is unsurprising given that ECVET is only one of the tools to encourage mobility and is a relatively new one. More importantly, there is some evidence that the infrastructure to support the implementation of ECVET is beginning to emerge. Most countries use learning outcomes, have developed a national qualifications framework, and have some form of modular and/or unitised structure in place. The main barrier to implementing ECVET is the lack of credit attached to individual modules and units in several countries. Nevertheless, examples were found of mobility exchanges taking place in vocational subjects between countries, although often students are not given formal credit under these circumstances.

There were few examples of the use of recognition of prior learning (RPL) in the study countries, which is likely to be linked to the fact that the primary focus of the study was IVET. Nonetheless, it is apparent that funding regimes also act as a barrier to the use of RPL for entry to IVET programmes. Interviewees suggested that RPL was often an expensive and time-consuming exercise that would be avoided by many education providers that were financed on the basis of achieving outcomes.

The study findings also suggest that a provider-led education market designed around outcome-based funding tends to restrict student flexibility and mobility. Naturally, providers are primarily concerned with the level of funding they receive from the public purse. If this is based on module and/or unit completions then there will be a reluctance to support students who are moving in and out of the system over different periods of time and with different training providers. However, these are precisely the students that often find their way into IVET programmes. A coherent learner-centred funding regime would be better placed to support such students. This would recognise the essential fluidity and complexity of the system and as such reward providers for successful outcomes in student retention, progression and completion.

5.2. Policy messages

Based on the findings of the study, the following policy messages can be outlined:

- (a) the adoption of modular and unitised structures for IVET qualifications and programmes should be encouraged, in line with policy objectives at EU and national levels. This will involve disseminating existing best practices within and across countries. The impetus for this growth in modularisation comes primarily from employers, but the needs and the involvement of students should increasingly be taken into account;
- (b) it should be recognised and acknowledged that EU Member States will have different preferences for the forms of modularisation developed in their countries. Some will prefer more traditional structures of modularisation, aimed at particular employers and student groups. Others will adopt more radical forms in response to the diverse needs of multiple stakeholders. All should be encouraged;
- (c) more should be done to encourage countries to attach credit values to their existing modular and unit structures. This would make a significant difference in creating flexibility and mobility within and across different IVET systems, and could be achieved through the use of credits linked to NQFs;

- (d) Member States should be supported in moving from provider-centred to learner-centred systems of IVET. The funding regime for such systems should follow the learner rather than the provider and allow for greater complexity and fluidity within the system;
- (e) there should be no 'dead ends' or 'blind alleys' when it comes to establishing progression routes for IVET students. Those who have successfully completed their IVET qualifications should have a right to progress on to a related higher education qualification. Articulation agreements between education providers should be mandatory, with progression pathways built into a student's programme of study. This may require cross-institutional cooperation at various levels in the Member States;
- (f) additional information, guidance and support systems for learners and employers are required, to understand and navigate better modular-based qualifications systems;
- (g) more research should be conducted to measure the impacts of modularisation and unitisation practices.

List of abbreviations

ANQ	Agência Nacional para a qualificação (National Agency for Qualifications, Portugal)
ANQEP	Agência Nacional para a qualificação e o ensino profissional, IP (National Agency for Qualifications and Professional Education, Portugal)
BBL	<i>beroepsbegeleidende leerweg</i> (apprenticeship training, the Netherlands)
BEP	<i>brevet d'études professionnelles</i> (vocational education certificate, France)
BIBB	Bundesinstitut für Berufsbildung Bonn Federal Institute for Vocational Education and Training (Germany)
BMBF	Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research, Germany)
BMHS	<i>berufsbildende mittlere und höhere Schulen</i> (intermediate or high-level vocational training school, Austria)
BOL	<i>beroepsopleidende leerweg</i> (vocational secondary education, the Netherlands)
BTS	<i>brevet de technicien supérieur</i> (undergraduate technician certificate, France)
CAP	<i>certificat d'aptitude professionnel</i> (professional aptitude certificate, France)
CCP	<i>Berufsbefähigungszeugnis/Certificat de capacité professionnelle</i> (certificate of professional competence, Luxembourg)
CFI	<i>crédit formation individualisé</i> (individualised training credit, France)
DAP	<i>beruflicher Eingungsnachweis/diplôme d'aptitude professionnelle</i> (vocational aptitude diploma, Luxembourg)
DT	<i>Techniker-diplom/Diplôme de technicien</i> (technician diploma, Luxembourg)
ECTS	European credit transfer system (for higher education)
ECVET	European credit transfer system for vocational education and training
EQF	European qualifications framework
ESF	European Social Fund
EU	European Union
EUD	<i>erhvervsuddannelse</i> (vocational education and training, Denmark)
IFTS	<i>Istruzione e formazione tecnica superiore</i> (higher technical education and training, Italy)
ISCED	international standard classification of educational development
IVET	initial vocational education and training
MBO	<i>middelbaar beroepsonderwijs</i> (initial training at upper secondary level, the Netherlands)
NQF	national qualifications framework
NVQ	national vocational qualifications (England)
OECD	Organisation for Economic Cooperation and Development
Ofqual	Office of Qualifications and Examinations Regulation (England and Wales)
OKJ	Országos Képzési Jegyzék (National qualifications register, Hungary)
OPH	Finnish National Board of Education

PCBB	Paritaire Commissie beroepsonderwijs bedrijfsleven (Joint committee on vocational education and business, the Netherlands)
PIEF	<i>Percursos integrados de educação e formação</i> (integrated education and training programme, Portugal)
QCF	qualification and credit framework (England, Wales, Northern Ireland)
SCQF	Scottish credit and qualifications framework
SNQ	<i>sistema nacional de qualificações</i> (national qualifications system, Portugal)
SQA	Scottish Qualifications Authority
SVQ	Scottish vocational qualification
UC	<i>unités capitalisables</i> (capitalisable units, France)
VET	vocational education and training
VMBO	<i>voorbereidend middelbaar beroepsonderwijs</i> (prevocational diploma, the Netherlands)

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Austrian legislation: *Vocational Training Act: training requirements*
(*Österreichische Gesetze: BAG, Berufsausbildungsgesetz: Ausbildungsvorschriften*) <https://translate.google.gr/?ie=UTF-8&hl=en&client=tw-ob#de/en/Ausbildungsvorschriften>

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The role of modularisation and unitisation in vocational education and training

Vocational education and training (VET) systems must adapt to the labour market, to technological developments, to changes in existing occupations and to new ways of work organisation. Differences in learners' performance or prior knowledge, skills and competences, also require flexibility in education and training provision. Modularisation and unitisation of VET programmes and qualifications is seen as part of the answer to these challenges.

This study investigates the role of modules and units in VET in 15 EU countries and aims to determine how these structures fit in the wider VET systems. It provides a comparative analysis of different modularisation and unitisation practices and the rationale behind their implementation, and an outline of the different national contexts in which modular and unitised structures developed over time. It also offers a close-up of three different approaches to modularisation in one occupational area, in Germany, the Netherlands and Scotland.

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