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Using UOE and ISCED to analyse changes in Vocational Education and Training

Cedefop project 'Changing nature and role of vocational education and training in Europe'. Working paper 3.1

Abstract

This working paper is one in a series of papers produced as part of the Cedefop project 'The Changing Nature and Role of VET' (2016-2018). The aim of the paper is to throw light on the usefulness of this classification and the international datasets in providing information about changes in enrolment in upper secondary initial vocational education and training during the period from 1995 to 2015. A first analysis of enrolment data available in Eurostat is carried out. Using the results from a survey carried out to collect data at the level of educational programmes, the paper discusses methodological issues in relation to the ISCED classification, which is used by national authorities to classify educational programmes. The paper presents the methodology for this survey. It concludes that classification of educational programmes using consecutive levels based on duration and progress may become increasingly unable to grasp the realities of an educational landscape where mobility, flexibility and lifelong learning is at the centre.

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Foreword

This working paper forms part of the Cedefop project 'The changing nature and role of vocational education and training (VET) in Europe'.

The purpose of the project is to improve our understanding of how VET is changing in the countries belonging to the European Union (as well as Iceland and Norway). Over a three-year period (2016-2018) the project will analyse how vocationally oriented education and training has changed in the last two decades (1995-2015) and based on these results investigate the main challenges and opportunities facing the sector today and in the future. The work is divided into six separate but interlinked assignments:

1. The changing definition and conceptualisation of VET.
2. The external drivers influencing VET developments.
3. The role of traditional VET at upper secondary level.
4. VET from a lifelong learning perspective.
5. The role of VET at higher education levels.
6. Scenarios outlining alternative development paths for European VET in the 21st century.

The study takes as its starting point that vocationally oriented education and training is something more than the traditional VET delivered at upper secondary level (in the form of school-based education or training, apprenticeships, or combinations of these). Due to the requirements of lifelong learning, we can observe a diversification of VET where new institutions and stakeholders become involved. Furthermore, we can observe an expansion of VET to higher education areas, partly through a reform of existing institutions, partly through the emergence of new institutions. This has been caused by factors internal to the education and training system as well as by external pressures linked to demographic, technological and economic changes.

Acknowledgments

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Executive Summary

Working Paper 3.1 is the first in a series of papers produced as part of the Cedefop project 'The Changing Nature and Role of VET' (2016-2018). It is one of three working papers reporting from the subproject entitled 'The changing role and nature of VET at upper secondary level'. This subproject involved analysing data from national education databases collected through a survey to national VET experts. The survey concepts were based on the delimitations used in international education statistics, notably the 2011 version of the ISCED (International Standard of Classification of Education) classification.

The research questions guiding the analyses in this subproject are:

- How has *enrolment in* and *completion of* initial VET at upper secondary level developed in the last two decades?
- What proportion of upper-secondary students attends VET courses and how has it evolved?
- Which qualifications are delivered, which occupational areas are covered by VET and how has this changed in the last two decades?
- Which are the main delivery forms of IVET and how has this changed during the period?

The results of the analysis of the survey responses with respect to the first two research questions are reported in Working Paper 3.2, while the qualitative questions are addressed in Working Paper 3.3. The aim of Working Paper 3.1 is to throw light on the usefulness of this classification and the international datasets in providing information about the first two research questions.

Chapter 1 sets the context for the analysis of the research questions and discusses current concerns about a decline in the attractiveness of VET and the statistical evidence at European level.

Chapter 2 presents the available international data for a historical analysis of enrolment in upper secondary VET. The principles of the ISCED classification and the methodology for the UOE data collection are presented. Finally, a few analyses of the development of enrolment in VET using UOE data are carried out to give an indication of the types of analyses that are feasible with these data. The analyses show that the share of enrolment in VET in upper secondary education between 1998 and 2012 has followed different paths of change across Europe. Thus, in some countries, a large increase in the share can be observed, while in others, the share has declined significantly. Further analysis shows that the magnitude and direction of change in VET's share appears to be negatively correlated to VET's share in 1998. Neither geography nor type of VET system is seen to provide a further explanation of the changes.

Chapter 3 discusses the challenges that national authorities are facing when assigning ISCED codes to educational programmes. Comparing data from the UOE databases, data from ISCED mappings, and data from national education databases the analysis finds significant divergence in the size of enrolment in upper secondary VET reported in these three sources. The research points to differences between the programme categorisation used in national statistics and the programme categorisation according to ISCED 2011 to be an important source of the difference.

Furthermore, issues pertaining specifically to the classification of VET programmes are discussed. The research points to the distinction in the ISCED classification between vocational education and general education as insufficient to grasp an increasing number of hybrid programmes involving vocational *and* general elements, allowing for individual pathways, and sometimes delivering dual qualifications. The results of the research show that such programmes are categorised differently in different countries. Hence, research and policy advice using the share of enrolments in VET in upper secondary education as an indicator may produce misleading results.

An additional source affecting enrolment figures are variations in the national practices with respect to categorising VET programmes at upper secondary level for adults, in particular non-formal programmes. The analysis finds that some countries report these variations to ISCED mappings as being within the scope of UOE, hence adult enrolment is included in the total figures, while others do not report such programmes to the UOE data collection. Modularisation in VET is seen to provide yet another statistical challenge when it does not lead to reclassification of modules that are used as elements in lifelong learning.

Finally, Chapter 3 considers the ISCED classification and the UOE data in the light of recent trends and systemic changes in VET across Europe. The main trends are identified as an increased drive towards flexibility of programmes, opening them up to participation by adults, as part of lifelong learning, and enabled by modularisation, and the introduction of online learning.

Chapter 4 briefly introduces and discusses the approach used in this research in the light of the findings of the previous chapters.

Chapter 5 presents overall conclusions and pointers for future research. It identifies three challenges that merit special attention when using enrolment data as an indicator of changes in VET. Significant variations in national reporting practices; the difficulties faced by national authorities when assigning upper secondary VET programmes to ISCED levels, and deciding whether or not to report each programme to the UOE data collection; and the challenges national authorities face when deciding whether to classify a programme as VET or general education, in particular as hybridisation appears to increase and the borderline between VET and general education appear to be increasingly blurred.

1 Introduction and objectives of this working paper

This is a working paper in the set of studies commissioned by Cedefop as part of the project 'The Changing Nature and Role of VET' (2016-2018). The project consists of six separate assignments, one of which was to examine changes during the twenty-year period from 1995 to 2015 in enrolment in and completion of initial vocational education and training (VET) at upper secondary level.

1.1 An excursion to the past

In a seminal article from 1983, Aaron Benavot observed a worldwide decline in the enrolment in vocational education and training (VET). In Western Europe, the share of upper secondary students enrolled in VET was found to drop from 31.3% in 1955 to 20.6% in 1975. However, during the same period, enrolment in upper secondary VET in *Eastern Europe* was found to increase from 53.1% to 67.2%. As Eastern European countries were ruled by communist regimes at the time, and hence belonged to an entirely different system, Benavot chose to disregard the increasing enrolment in VET in these countries, when he concluded that VET's importance globally was on the decrease and was set to become a phenomenon of the past. This development he saw as the result of a widespread ideological drive towards more egalitarian societies:

> *'The rise and fall of vocational education coincides with a shifting mandate for secondary schooling – a movement away from the production of differentiated workers that fit a differentiated economy into the production of more standardized citizenry in line with the egalitarian demands of nation-building and citizenship privileges'* (Benavot, 1983, p. 74)

Today, Europe includes both the Western Europe and the Eastern Europe that Benavot knew then. If he had taken the then highly unlikely choice of calculating the average enrolment shares for Eastern and Western Europe together, he would have found instead of a dramatic decline a quite stable development – indeed a slight increase – in VET's share of enrolment in upper secondary education from 42.2% in 1955 to 43.9% in 1975.

Furthermore, history has demonstrated that if the egalitarian ideology ever had the power to overrule the demands of a differentiated economy, this was a passing phase. This is witnessed by the education policy discourse after 2000 with its recurring call for demand driven education – in particular, demand driven VET – and the increasing focus of international bodies such as the EU, the OECD, Cedefop, and ETF on the role of VET in supplying the right skills for the labour market, aided by skills anticipation (see e.g. European Commission (2012); OECD (2011); OECD (2017); Cedefop (2017)).

This excursion to an earlier contribution to the body of theory on the role and importance of VET in the educational landscape has been included here because it may teach us three lessons with relevance for an assessment of the changing role and nature of VET.

- First, it points to the fact that **the choice of a geographical basis for statistical calculations has significant implications for the results**, and by implication, for the assessments of strategic directions to be taken.

- Second, it reminds us that history is non-linear. **At any moment in history, major and unexpected disruptions may occur,** changing the entire context of education as well as our thinking about its role.
- Finally, it serves as a reminder that **what appears at a given moment in time to be stable socio-economic trends impacting enrolment in VET may change or even be reversed**.

1.2 Recent concerns about the role of VET

In the last two decades, while policymakers at international and national levels have repeatedly emphasised the pivotal role of VET in supplying the right skills for growth (Eichhorst et al., 2012), there has also been signs of a certain level of concern surrounding the attractiveness of VET, often linked to an observation of declining enrolment in upper secondary IVET. Thus, in European Education and Training Monitor simply states that '*for many young people and their parents, VET is still not as attractive as general education pathways'* (European Commission, 2016).

Declining enrolment in VET has been linked to a perceived lack of attractiveness of VET pathways in many countries as well as at European (and international) level. For example, the situation in Slovenia, according to one author, is characterised by a *'lack of interest among young people in this kind of education (IVET, ed.), and […] great interest of young people in tertiary education* '(Lovšin, 2014, p. 105). In Denmark, the enrolment in VET as a share of young people enrolling in upper secondary education dropped from 30% in 2004 to 19% in 2014 (The Danish Goverment, 2014), and this served as the main rationale for the latest Danish VET reform. In the Text of Agreement by the political parties backing the reform, the reasons for the above-mentioned drop in enrolment was summed up as follows:

> '*The reputation of EUD (upper secondary IVET) is low. Today, the weaknesses overshadow the many strengths of EUD and the good reasons for choosing to enrol in an EUD programme'* (The Danish Goverment, 2014).

This apparent weakness of VET has been observed across Europe and beyond, see e.g. Ruth and Grollmann (2009), who compare the situation with respect to IVET in Australia, Canada, U.S.A. and Japan. They observe that

> *'The image and attractiveness of IVET is problematic in each of the countries. Without exception, IVET has a low status and is perceived as a track for the 'under achievers' and the 'losers' (Ruth and Grollmann, 2009, p. 48)*.

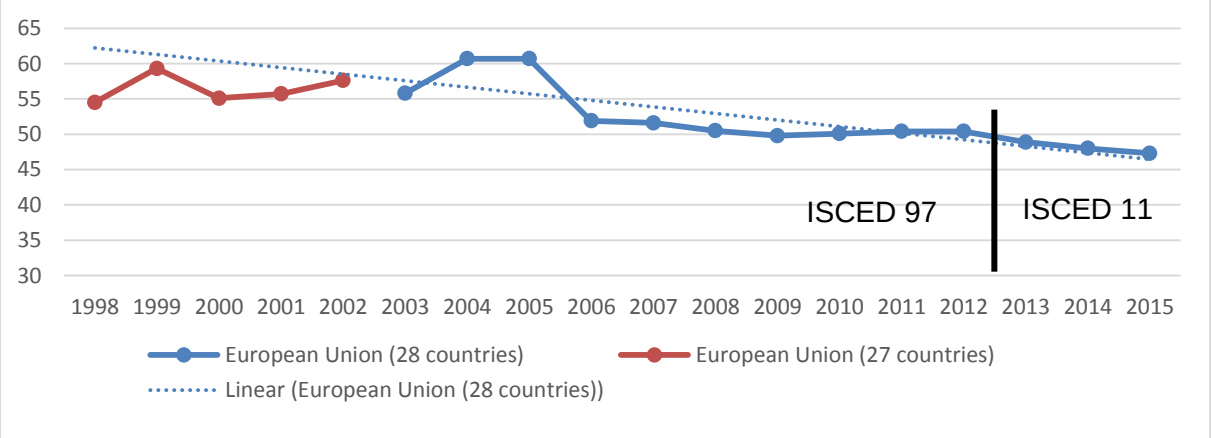
The low attractiveness of VET is explained variously by economic factors (lower salaries for VET graduates than for academic graduates); lack of political attention to the quality of VET provision; cultural perceptions of manual work as being of less value than cognitive work, and downright snobbery, as expressed by a UK scholar who used to be a teacher:

> *'In my own work as a sixth-form manager, I often found myself faced with a parent whose 16-year-old desperately wanted to take a course in building or catering or childcare – and would have done fantastically well at it – yet they would insist that 'no child of theirs' would do such a thing. As if reading books were inherently good and working with one's hands, or heart, were inherently bad.'(Mcinerney, 2014)*

The policy concern about the attractiveness of VET is witnessed by a wave of policy literature analysing challenges to the attractiveness of VET and providing suggestions for how to raise it(Cedefop, 2014; Federal Institute for Vocational Education and Training (Bibb) and UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, 2014). At national level, many countries have launched initiatives to promote VET. For example, policy makers observed that an increasing share of *young people opted for other educational tracks* in the Netherlands. Therefore, the Dutch VET Association launched a website called 'dit is MBO' (this is VET) to promote VET in 2011. The website and social media channels of 'dit is MBO' report on the opportunities for young people and portray proud and passionate VET students.

At first glance, the statistical evidence would appear to support concerns about the future of VET. Figure 1-1 shows enrolments in upper secondary IVET in Europe as a share of total enrolment in upper secondary education from 1998 to 2015. The highest share (60.7%) was achieved in 2004 and 2005, and the lowest (47.3%) in 2009, and after 2005, the figures suggest an overall declining tendency.

Figure 1-1: Enrolment in VET at upper secondary level (ISCED Level 3) as a share of total enrolment in upper secondary education, 1998-2015, %.



Source: Eurostat ([educ_ipart_s]) and [educ_uoe_enrs05]

The figures underlying the graph are the result of adding for each year all figures for enrolment in upper secondary VET in EU countries and dividing this aggregated figure by the aggregated figure for all enrolments in upper secondary education. Any interpretation of the graph should therefore consider the variation underlying the aggregation, and indeed, the enrolment figures (both in VET and general education) in European countries vary significantly (see, e.g., McCoshan et al. (2008)). To better understand the nature of these variations, there is therefore a case for a more detailed analysis of the changes.

1.3 The objective of this Working Paper

In the light of these introductory observations, the aim of the research has been to dig deeper into and analyse changes in enrolment in upper secondary IVET at the level of educational programmes. The overarching aim of the analysis has been to identify and analyse patterns and trends in IVET that may not be visible in the aggregated national data, let alone aggregated data at European level.

To achieve this aim, a research design was developed that combined quantitative, statistical data with qualitative information about changes in policies and provision of vocational education and training at national level. The research questions guiding the analyses were:

- How has *enrolment in* and *completion of* initial VET at upper secondary level developed in the last two decades?
- What proportion of upper-secondary students attends VET courses and how has it evolved?
- Which qualifications are delivered, which occupational areas are covered by VET and how has this changed in the last two decades?
- Which are the main delivery forms of IVET and how has this changed during the period?

Concerning the statistical data, time series for enrolment at the level of educational programmes are not available in international databases. Consequently, the research needed to build on national statistical data. A survey was carried out to obtain the detailed statistical data as well as the qualitative information that was required to underpin the analysis of the data. The survey methodology is described in more detail in Chapter 0.

The results of the analysis of the survey responses with respect to the first two research questions are reported in Working Paper 3.2, and the qualitative questions are addressed in Working Paper 3.3.

The current Working Paper 3.1 sets the scene for Working Papers 3.2 and 3.3 by considering the existing statistical knowledge about changes in upper secondary IVET and discussing methodological issues in relation to the statistical definitions and classification.

2 First step: analysing international data

Compared to the situation with respect to data availability and international comparability in other sectors and areas of society, the situation in education is quite favourable due to international collaboration in the field. Chapter 2 presents this collaboration and the tools that are used followed by an analysis of international datasets guided by the research questions.

2.1 International collaboration in the collection of education data

National education data have been collected for a long time in most countries. In the EU, times series for most education data can be established from 1998, while some data are available from 1990 or 1995 (Eurostat, 2016). However, since 2000, comparable international data on education have been provided through a major international collaboration, i.e., the UNESCO – OECD – Eurostat data collection (the UOE data collection). The collaboration involves the UIS (UNESCO Institute for Statistics), the OECD's Statistical Office, and Eurostat. Each of these organisations regularly oversee the collection of education data in countries around the world according to a common methodology (Eurostat, 2016).

Data are collected using the International Standard Classification of Education (ISCED), which will be presented below in more detail. The collection includes data on:

- pupils and students enrolled and new entrants;
- graduates;
- student mobility;
- education personnel;
- education expenditure; and
- language learning (UNESCO et al., 2015).

2.2 The ISCED classification

ISCED, the International Standard Classification of Education, is a taxonomy which allows the classification of educational programmes. In the context of this research, the relevant versions of ISCED are the second version, ISCED 1997, and its successor, ISCED 2011. Although both versions build on the same main concepts, i.e., **levels of education**, **orientation,** and **fields of** education, ISCED 2011 is significantly more detailed and complex than ISCED 1997. Below, ISCED 2011 is briefly presented with reference to the points where it differs from ISCED 1997.

The **educational programme** is the main unit of the ISCED classification. In ISCED 1997, an educational programme was defined as:

> *'…an array or sequence of educational activities which are organised to accomplish a pre-determined objective or a specified set of educational tasks. Objectives can, for example, be preparation for more advanced study, qualification for an occupation or range of occupations, or simply an increase of knowledge and understanding.'* (OECD, 1999, p. 12)

In ISCED 2011 the concept of an educational programme was been simplified, but also broadened. Now an educational programme is defined as:

> *'…a coherent set or sequence of educational activities or communication designed and organized to achieve pre-determined learning objectives or to accomplish a specific set of educational tasks over a sustained period.'* .(OECD et al., 2015, p. 12)

The definition now includes 'communication' in addition to 'educational activities'. 'Objectives' have been replaced with 'learning objectives' and the description of possible objectives (preparation for further study, qualifying for an occupation, increasing knowledge) has been omitted.

ISCED 2011 significantly tightens the requirements for completion in comparison with ISCED 1997, which were rather vague on this subject. In ISCED 2011, successful completion of an educational programme requires a certification. If the programme leads to a qualification, successful completion of the programme means obtaining that qualification.

The ISCED 2011 classification includes three dimensions (UNESCO-UIS, 2012):

- **Level** of education or training. According to ISCED 2011, any education programme may be assigned one of ten levels, from Level 0 (subdivided into Level 01 and Level 02) to Level 8, where Level 0 is early childhood education and Level 8 is doctoral or equivalent level. For comparison, ISCED 1997 had seven levels.
- **Orientation.** Education programmes are characterised by one of two types of orientation:
    1. *Vocational;* or
    2. *General*
- **Field of education and training** (revised in 2013 (UNESCO-UIS, 2014)). The field of education and training indicates the area of knowledge and skills addressed by a programme. This dimension has three levels of detail, resulting in 55 fields in all (ISCED 1997 had 25 fields). The three levels of detail associated with an education programme are:
    1. *Broad field* (eight fields, e.g., 'Arts and humanities', 'Information and communication technologies (ICT)');
    2. *Narrow field* (a different number within each broad field. In all 19 narrow fields, e.g., 'Environment', 'Social and behavioural sciences');
    3. *Detailed field* (a different number within each narrow field. In all 55 detailed fields, e.g., 'Physics', 'Textiles (clothes, footwear and leather)'

In principle, all education or training programmes can be classified in ISCED 2011 using a three-digit number, where:

- the first digit indicates the level;
- the second digit indicates orientation (4: general, 5: vocational); and
- the third digit indicates educational attainment:
    1. Insufficient for level completion or partial level completion;
    2. Partial level completion;

3. Level completion without direct access to next level;
4. Level completion with direct access to ISCED 5, 6 or 7.

Hence, a programme with the ISCED code 353 indicates a programme which completes all the requirements for the level, but does not give access to the next level. The field of education or training is not integrated into the ISCED code, but is supplementary information.

Using these parameters, any education and training programme can be assigned to the nine levels and their sublevels by considering their duration, the cumulative duration since start of schooling, an assessment of the complexity of the curriculum, the entry requirements, the educational attainment, and access to upper levels. The ISCED 2011 manual (OECD et al., 2015) provides an extensive description of conditions that should be fulfilled to classify a programme at this level.

The focus of the current study is initial upper secondary vocational education and training. In ISCED terminology, 'Upper secondary education' equals Level 3. Therefore, the criteria for assigning an educational programme to an ISCED level are exemplified by the description of the main criteria for classifying educational programmes at Level 3, see Box 2-1.

Box 2-1: Main criteria for classifying educational programmes at ISCED 2011 Level 3

Content
Programmes which form the second/final stage of secondary education may be either general or vocational programmes. Some of these programmes allow direct access to ISCED Level 4, and/or Levels 5, 6 or 7.

Entry requirements
(§168) ISCED Level 3 requires the completion of lower secondary education (ISCED Level 2) or the ability to handle ISCED Level 3 content through a combination of prior education as well as life and work experiences. A specific ISCED Level 2 qualification or a specific level of achievement may be required for entering some or all ISCED Level 3 programmes.

Cumulative duration since the beginning of ISCED Level 1
(§164) ISCED Level 3 begins after 8-11 years of education since the beginning of ISCED Level 1. Pupils enter this level typically between ages 14 and 16. ISCED Level 3 programmes usually end 12 or 13 years after the beginning of ISCED Level 1 (or around age 17 or 18), with 12 years being the most widespread cumulative duration. However, exit from upper secondary education may range across education systems from usually 11 to 13 years of education since the beginning of ISCED Level 1.

Source: OECD et al. (2015)

It should be noted, that these are only the main criteria for Level 3. There are also subsidiary criteria related to programme transition point and teacher qualifications.

2.3 The ISCED mappings

The purpose of the so-called ISCED mappings is to map national education systems according to ISCED to '*ensure a transparent process of coding national education programmes and related qualifications into comparable categories for use in international statistics by linking the classification criteria to the properties of the education programmes and their related qualifications'* (UNESCO, 2017).

The mapping is based on an extraordinary survey to all countries participating in the UOE data collection that was launched in 2007. The information is reported by the national authorities in each country. The mappings contain qualitative information as well as data for enrolment and completion for all educational programmes in a country. Each mapping holds information from the most recent (at the time of reporting) school year. For each country, two mappings are or will be available, one according to ISCED 1997 and one according to ISCED 2011. In the 2011 mappings, educational programmes are specified according to ISCED 2011, but referenced to ISCED 1997 as well.

2.4 What can UOE data tell us about changes in enrolment in upper secondary IVET

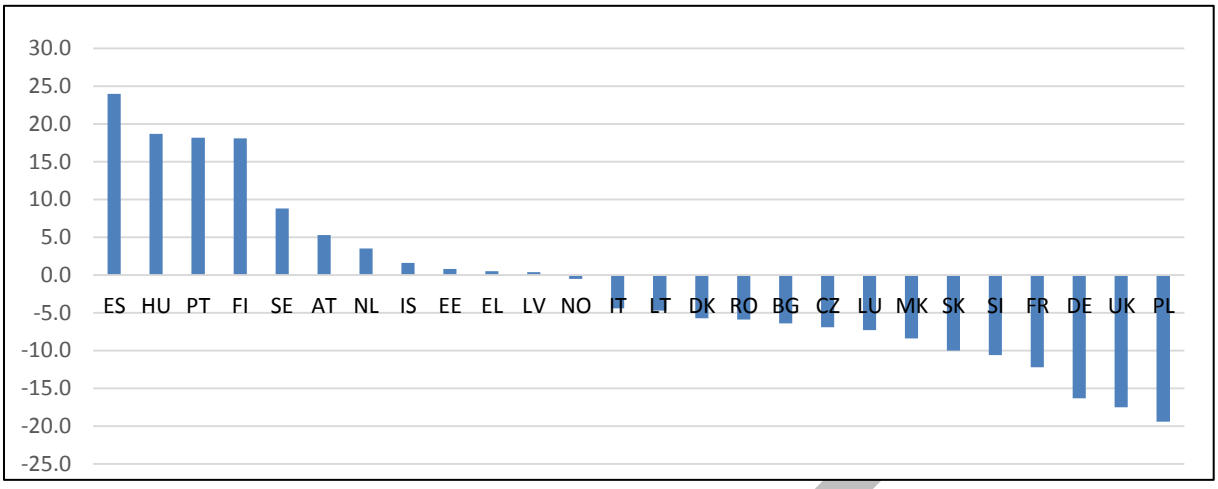
Although there are reservations to be made concerning the validity and comparability of the UOE data, as will be discussed in Chapter 3, the data are valuable in throwing light on the broad situation of VET in Europe.

First, the UOE data tell us that in 2015, 10.3 million young people were enrolled in VET in EU28 – but the enrolments were very unevenly distributed. Four countries (Germany, France, Italy, and the UK) between them accounted for more than half of the total enrolment in VET in Europe, while at the other extreme, in eight countries (Estonia, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Iceland, and Liechtenstein) the total number of young people enrolled in VET were fewer than 50,000.[1] Any major shift in the enrolment in VET in either of these four countries will strongly influence the aggregated enrolment figure. In small countries or countries with a small number of VET enrolments, the number of enrolments can undergo quite dramatic changes without this being visible in the aggregated European figures. This should be kept in mind when interpreting changes in VET at European level, since small changes in percentage terms in the figures for the large countries will be reflected in average figures for Europe, while changes of the same relative size in a small country will hardly be visible in an average figure for Europe. Therefore, in the following, we consider the changes country by country rather than making assessments based on European averages.

The first observation that can be made about changes in the enrolment in VET based on UOE data is that the development in enrolments has been quite uneven across Europe. Figure 2-1 shows the change between 1998 and 2012 in the share of VET in the total enrolment in upper secondary education for European countries where data were available for both these years. The changes in the share of VET ranges from an increase of 24 percentage points in Spain to a decrease of 19 percentage points in Poland.

Figure 2-1: Change from 1998 to 2012 in the VET's share of enrolment in upper secondary education (ISCED Level 3). Percentage points

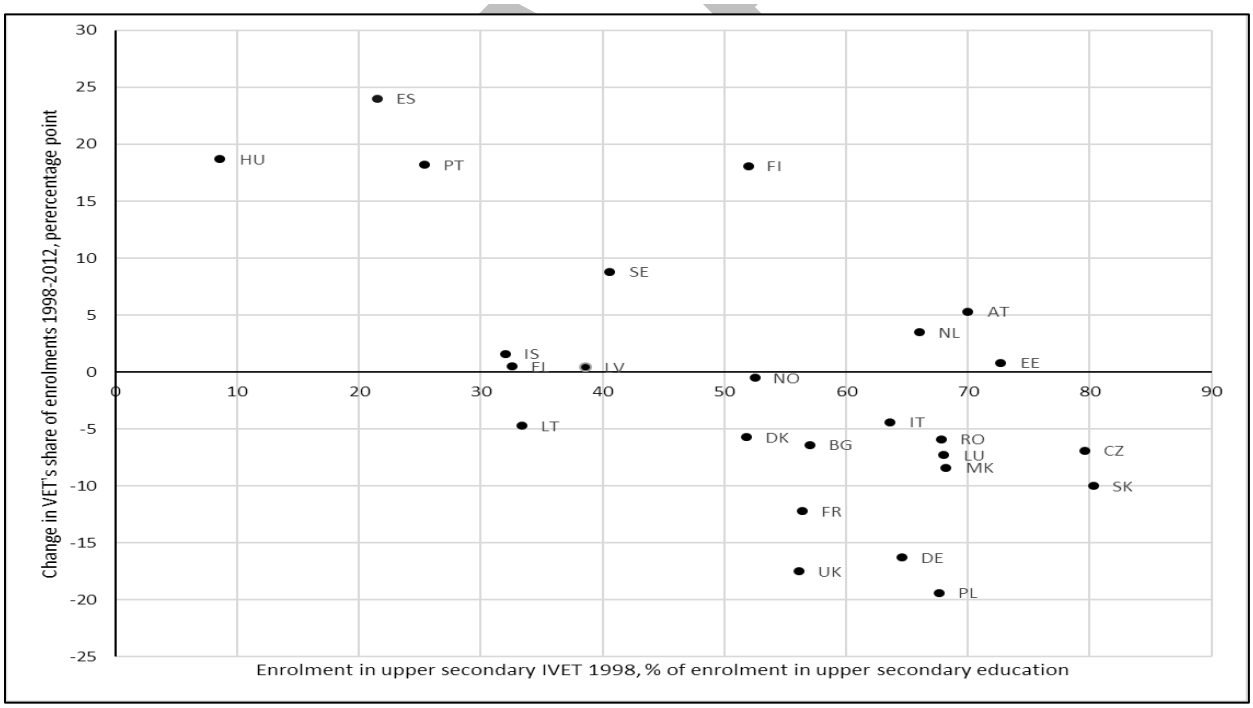
[1] In 2015, according to Eurostat [educ_uoe_enrs04], the four countries put together accounted for 53.5% of enrolment in VET in EU28, and each of them accounted for more than 10% of enrolment.



Source: Eurostat [educ_ipart_s], own calculations

The starting point for these countries however differed significantly as illustrated by **Error! Reference source not found.**. The figure shows VET's share of upper secondary education in 1998 and the change in that share between 1998 and 2012 for each country. [2] The figure indicates a reverse correlation – albeit not strong – between the share of upper secondary students enrolled in VET in 1998 and the change in that share.

Figure 2-2: The share of VET in 1998 and change to 2012



Source: Eurostat [educ_ipart_s], own calculations.

With respect to the situation at the starting point in 1998, three groups of countries can be loosely identified:

[2] The start and end year is determined by data availability. In these years, ISCED 1997 was used, hence the data are comparable.

The first group includes three countries, where VET's share of enrolment in upper secondary education was below 30% in 1998 (Spain, Hungary, and Portugal), the share increased by more than 15 percentage points until 2012.

The second group of countries includes five countries (Iceland, Greece, Lithuania, Latvia, and Sweden), which all had a share of enrolments in VET from 30% to 50% in 1998. In three of these countries (Iceland, Greece, and Latvia), there has been a positive, but negligible growth in the share, while in Sweden, there has been a quite substantial growth of 8 percentage points. Finally, in Lithuania, the share has dropped about 5 percentage points.

The third group all had a VET-share of more than 50% in 1998. Among these countries, most experienced a drop in that share between 1998 and 2012. Poland, where VET's share of enrolments in upper secondary education in 1998 was 67,6%, experienced a drop of almost 20 percentage points to 48.2% in 2012. Other countries experiencing significant drops were Germany, France, and the UK. All these three countries have historically strong, but structurally fundamentally different IVET systems. In addition, there are several countries, all in different parts of Europe and representing quite different approaches to VET, which experienced a drop in the share of between zero and ten percentage points. Four countries with an initial share of VET of more than 50% stand out because VET's share of enrolments in 2012 is larger than in 1998 (Estonia, the Netherlands, Austria, and Finland). In the first three countries, the share increased by 1-5 percentage points in 2012, while in Finland, the share went from 52.0% in 1998 to 70.1% in 2012.

Figure 2-2 is interesting because it suggests that there does not appear to be any relationship between geography and the development in enrolment figures, and moreover there does not appear to be a relationship between types of VET system and the development in the enrolment figures.

Concerning geography, there are countries from different geographical groups[3] represented in all the three 'groups', and countries from particular geographical groups are spread out across the chart – for example, among the Western Mediterranean countries, VET in Spain and Portugal had low shares of enrolments in upper secondary education initially, but has experienced significant growth. In France, VET had a high share of enrolment initially, but has experienced a substantial decline, and in Italy, the share of VET was even higher than in France, but the decline in the share was considerably smaller.

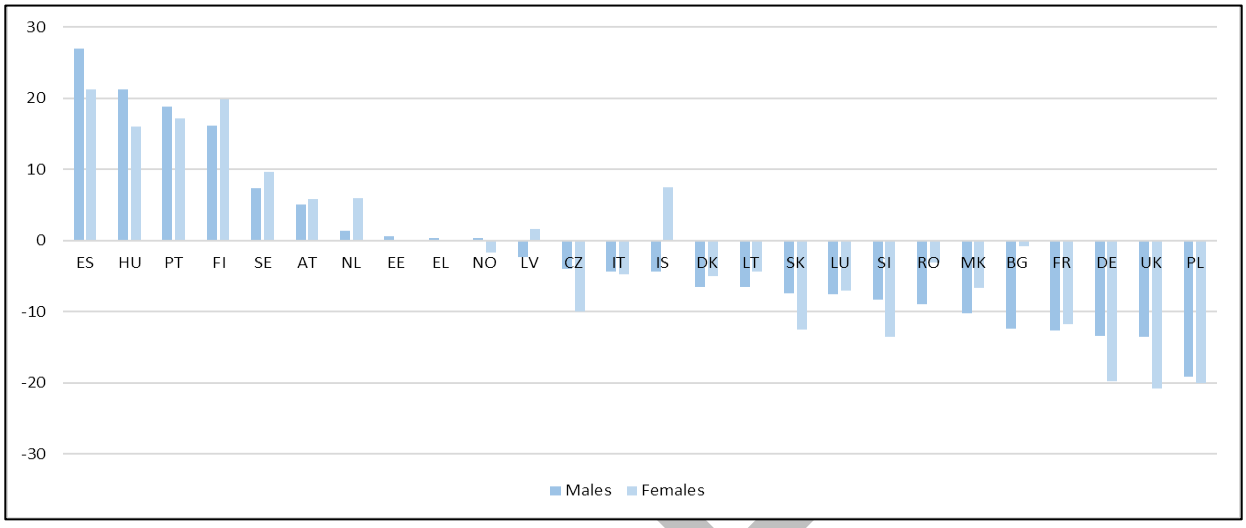
Considering VET systems, the most frequent distinction is between dual VET systems and school-based VET systems. In countries with dual VET systems (Germany, Austria, Denmark), the share of students at upper secondary level enrolled in VET has developed very differently. In all three countries, the share of upper secondary students enrolled in VET exceeded 50% in 1998. However, the share had decreased by 5.7 percentage points in

[3] For research purposes, the European countries are often divided into groups based on geography. In Working Paper 3.2, data are presented according to a geographical grouping proposed by Cedefop and having with the following country categories: Baltic countries (EE, LV, LT); Central European countries (AT, BE, DE, NL, LU, SI); Nordic countries (DK, FI, IS, NO, SE); South East European countries (BG, RO, HR); South Mediterranean countries (EL, CY, MT); Visegrád countries (HU, SK, PL, CZ); Western Mediterranean countries (FR, ES, IT, PT); Western countries (Ireland, the United Kingdom). This grouping is explained in more detail in Working Paper 3.2.

Denmark, and by 16.3 percentage points in Germany, while it had increased by 5.3 percentage points in Austria in 2012.

Moreover, the change in VET's share of enrolment is also not the same for men and women.

Figure 2-3: Change in the VET's share of enrolment in upper secondary education 1998-2012, males and females



Source: Eurostat [educ_ipart_s], own calculations.

As this brief examination of the UOE datasets on enrolment in upper secondary VET has illustrated, aggregated enrolment data at European level do not provide a true picture of the situation in VET in Europe, since the enrolment figures and the changes in them differ significantly across Europe. At the national level, the UOE data tells a quite mixed story about enrolment in VET in Europe and changes between 1998 and 2012 - from countries with initial small shares of enrolment in VET, but large growth in the share, to large countries with large, but declining shares of enrolment in VET, to countries with large and growing shares in VET.

Neither geography nor types of VET systems appear to be closely correlated with the different development paths. Therefore, a more fine-grained analysis is called for. Before presenting the approach adopted by this study to achieving a clearer picture of the situation in European countries with respect to changes in enrolment in upper secondary IVET, Chapter 3 will consider some additional methodological challenges that may impact on the validity and comparability of UOE data.

3 Limits to UOE when analysing changes in VET

In 2008, a study on the implementation of the Copenhagen Process found that:

> '*Undoubtedly, the most problematic issue in the study was data collection and comparison. International data sources, such as Eurostat and OECD, are of questionable reliability at more detailed levels – especially when comparing different tracks, owing to different ways in which countries classify their provision*.' (McCoshan et al., 2008, p. 6)

This chapter discusses some critical features and characteristics of the ISCED classification and the UOE data collection with relevance to the use of the resulting international education data for policy purposes.

By implication, as ISCED is the global standard for classification of education and training programmes, and as quantitative data on enrolment, participation and completion are calculated and stored nationally at programme level, it should be possible to achieve a true and very precise picture of changes in these variables over any period of time. However, the data collection and analysis undertaken in this assignment illustrate that – at least in the case of upper secondary IVET – this is only partially feasible. Three types of issues can be identified:

- General methodological issues facing the UOE data collection
- Issues with specific relevance for VET
- Issues related to systemic changes

3.1 General issues facing UOE

In the ISCED 2011 mappings, all programmes have been assigned level and orientation according to ISCED 2011, regardless of when they were introduced. Consequently, by adding up for each year enrolment data for each programme at Level 3 with the orientation 'V', it should be possible to arrive at a valid estimate of total enrolment in upper secondary VET for that year. Furthermore, it is to be expected that this total would be the same as the UOE figure for total enrolment in upper secondary education with a vocational orientation for the same year.

However, our research has revealed that this is far from always the case. In a number of countries, we have found **significant inconsistencies between the UOE data, the data in the ISCED mappings, and the data stored in national databases**. Table 3-1 and Table 3-2 illustrate this issue. The tables show figures for total enrolment in upper secondary IVET in 2015 from three sources: UOE data from Eurostat, the ISCED 2011 mapping, and the national education databases for Denmark and France respectively.

Table 3-1: Denmark: Enrolments in upper secondary IVET, 2015, three different sources

Enrolments according to… Programme in ISCED mapping for Denmark 2015	UOE data (Eurostat [educ_uoe_enrs04])	ISCED 2011 mapping for Denmark	Danish national education database
353.10, 'Vocational educational training, main course'	-	56,000	37,941
353.20, 'Vocational educational training, others'	-	1,000	-
354.10, 'Vocational educational training, main course (access to higher level)'	-	20,000	-
IVET school based Introduction year (not in ISCED mapping)	-	-	44,874
Total	**132,370**	**77,000**	**- 82,815**

In the case of **Denmark**, there is significant difference between the three figures for total enrolment. The figure in the UOE dataset is 71% higher than the figure that results from adding up figures for all educational programmes at ISCED Level 3 with orientation 'V' in the ISCED mapping.

Furthermore, the programmes used in the ISCED mapping only match the programme definitions in the national database in one case (the main course of the main VET programme), and even for this programme, the figures from the two sources differ considerably.

Finally, the figures for enrolment reported to the ISCED mapping for Denmark appear unusually 'round' - they are rounded off to the nearest thousand, while this is not the case for the UOE data nor for the data in the national database.

In **France**, the figures from these three sources also differ considerably albeit the difference between UOE data and ISCED mapping data is relatively smaller, and the difference between ISCED mapping data and data from national databases less dramatic (Table 3-2)

Table 3-2: France: Enrolments in upper secondary IVET, 2015, three different sources

Enrolments according to… Programme in ISCED mapping for France 2015	UOE data (Eurostat [educ_uoe_enrs04])	ISCED 2011 mapping for France	French national education database
Vocational secondary education (2nd cycle) preparing to Certificat d'aptitude professionnelle (CAP)	-	311.400	274.058
Vocational secondary education (2nd cycle) preparing to Mention Complémentaire (MC)	-	14.700	16.617
Vocational secondary education (2nd cycle) in health and social services institutions, preparing to qualifications of child care assistants and equivalents	-	55.400	32.359
Vocational secondary education (2nd cycle) preparing to Brevet Professionnel (BP)	-	51.400	41.148
Vocational secondary education (2nd cycle) preparing to Bac Professionnel or to an equivalent diploma	-	669.000	591.492
Vocational secondary education (2nd cycle) in health and care institutions preparing to qualifications of Moniteur éducateur (and equivalent)	-	7.700	-
Total	**1.081.359**	**1.109.600**	**681.616**

In the case of France, the programme definitions in the ISCED mapping match those in the national database, but the enrolment figures for 2015 differ considerably between the two sources – in four out of five instances, the national enrolment figure is noticeably smaller than the figure reported to ISCED.

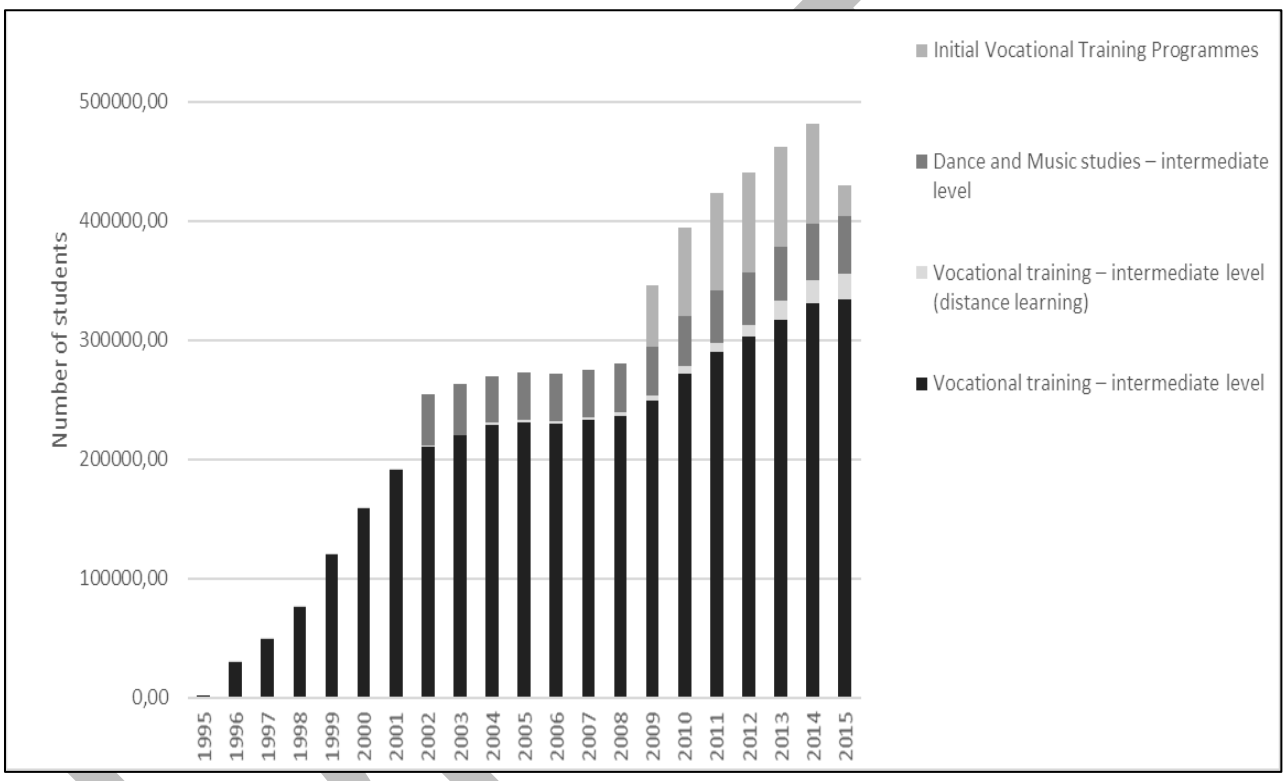
It is not easy to trace the origins of these quite significant variations between the different sources or to make sure that the identified sources of variations between the figures account for the entire difference. In the case of Denmark, at least some of the differences between the figures from the national database and the other two sources can be explained by differences in classification of programmes, as the national Danish database does not use the ISCED classification. Instead, programmes are defined based partly on the institutions providing the programmes, partly on the type of qualification delivered. This is also the case in France. Even though the national expert has managed to allocate enrolment figures in the national database to the ISCED programmes, this was not without problems. Hence, the French country expert wrote to the research team: *'I had to compute a lot of data myself because some of the proposed categories [the educational programmes described in the ISCED 2011 mapping, ed.] in the Excel table do not correspond to the national categories in the French statistics'*.

A particular difficulty exists where the national statistics are organised according to EQF level rather than ISCED, which is the case in Malta. Here, there is one IVET programme at Level 3. The UOE figure for enrolment in VET at Level 3 in 2015 is 2,149, the ISCED mappings say 1,465, and the calculation based on national datasets results in an enrolment figure for 2015 of 2,170.

These examples illustrate that despite the detailed guidance that is available for helping education stakeholders using ISCED to classify educational programmes (OECD et al., 2015), and the guidelines for reporting to the UOE data collection (UNESCO et al., 2015), **practices when reporting to the UOE data collection and to the ISCED mappings vary considerably across countries.**

A different challenge is associated with reclassification of programmes. A detailed analysis of the description of programmes in ISCED mappings combined with national experts' notes reveals that variations in the total number of enrolments in educational programmes at Level 3 often turn out to be merely the result of reclassification of programmes, as illustrated by the example of Spain shown in Figure 3-1.

Figure 3-1: Enrolment in upper secondary VET in Spain, 1995-2015, by programme



Source: Survey to national experts, own calculations.

Enrolment data for the programme 'Dance and Music studies' are only available after 2001. According to the Spanish country expert, the programme existed prior to that date but was reclassified in 2002. 'Dance and Music studies' used to span three levels in the national qualification system, from 'elementary' to 'higher', and only in 2002 was 'Intermediate Dance and Music studies' singled out. Before 2001, statistics on dance studies did not distinguish between different levels, so it is not possible to provide data on 'intermediate level' studies for the years 1995-2001.

A slightly different example of reclassification took place in Bulgaria, where enrolment in one VET programme ('VET programmes for second level of professional qualification') dropped between 2010 and 2011 due to the cancellation of 13th grade and the transition of students to third degree programmes of professional qualification.

3.2 Specific challenges with relevance for VET

Whereas the issues described above are generic – variations in practices of classification and reporting, and reclassification of programmes may occur in all types and levels of education – there are specific issues attached to classifying and reporting VET programmes.

A major issue concerns the 'orientation' dimension in ISCED 2011, i.e., whether an educational programme is classified as G(eneral) or V(ocational).

Box 3-1: Vocational and general education, ISCED 2011 definitions

Vocational education
'Programmes that are designed for learners to acquire the knowledge, skills and competencies specific to a particular occupation, trade or class of occupations or trades. Vocational education may have work-based components. Successful completion of such programmes leads to labour market-relevant vocational qualifications acknowledged as occupationally-oriented by the relevant national authorities and/or the labour market.'

General education
'Programmes that are designed to develop learners' general knowledge, skills and competencies, as well as literacy and numeracy skills, often to prepare students for more advanced education programmes at the same or higher ISCED levels and to lay the foundation for lifelong learning.'

Source: (UNESCO-UIS, 2014)

In most countries, there are upper secondary education programmes that can be unambiguously classified as 'V' (typically upper secondary IVET-programmes in countries with long-standing VET systems and leading to traditional crafts or occupations) or 'G' (typically programmes preparing for university, and with such names as 'Matura', 'Baccalaureate' or 'Gymnasium'). However, the current research indicates that in many cases – and perhaps increasingly – there are types of programmes that are difficult to classify as 'V' or 'G' because they combine general and vocational elements in different ways.

First, **programmes delivering a 'dual qualification' are variously categorised as 'V' or 'G'**. Dual qualifications (i.e., both a vocational and a general qualification) have been known for several years (McCoshan et al., 2008), but appear to be gaining ground across Europe. For example, Denmark, Lithuania, and Norway launched programmes delivering dual qualifications during the 1995-2015 period, enabling students to obtain both a vocational and a general qualification after 3-4 years of study. In Lithuania, this programme is categorised as VET in the ISCED mapping, while in Denmark, it is classified as general education.

Second, **programmes with flexible pathways are variously categorised as 'V' or 'G' – and the categorisation may be changed**. The research has found examples in Latvia, Romania, and Belgium of the introduction of upper secondary programmes allowing students to follow – and switch between – individual pathways, leading either to a general or a vocational qualification. One example of a programme where the orientation dimension was changed during the 1995-2015 period is shown in

Box 3-2: Changing orientation of a programme delivering a dual pathway.

Box 3-2: Changing orientation of a programme delivering a dual pathway

In Belgium (Flemish speaking part), the programme 'Regular secondary education - 3rd stage - 1st and 2nd year of the 3rd stage - KSO (artistic secondary education)' combines a broad general education with active arts practice. In the third stage, the specific training component can be narrowed down with a view to facilitating the ultimate career choice or the possible educational pathways in higher education. In ISCED 1997 and in UOE 2013, 'KSO' was reported as vocational education, while in the ISCED 2011 mapping, the programme is classified as general education.

Source: Survey to national experts, 2017

In addition to the difficulties in applying the orientation dimension to concrete programmes, there are **challenges when national authorities decide whether a VET programme is within or outside the scope of the UOE data collection**. The research has found that VET programmes at upper secondary level that do not lead to full level completion according to ISCED are variously reported as 'Scope UOE' – and hence, their enrolment is included in total figures – and as 'Out of scope UOE', in which case the enrolment is not included in the total enrolment figures. This has been found to be the case for short or single-subject VET programmes for adults in particular. Hence, in some countries, like for instance Belgium (Flemish-speaking part), Norway and Sweden, upper secondary VET courses for adults that do not lead to level completion are reported in the ISCED mapping as 'Scope UOE' at Level 3, and the enrolment in such courses therefore contributes to the total enrolment figures for Level 3.

Box 3-3: Norway: Folk High Schools

In Norway, 'Folk high schools' are reported to the ISCED 2011 mapping as a vocational programme at Level 3 within scope UOE. The schools offer a variety of non-traditional and non-academic programmes as well as some academic programmes These courses do not grant degrees or conduct exams. They do *'provide credentials for further study'*, but do not lead to an occupation or give access to studies at Level 4.

Source: ISCED mappings 2011, Norway (UNESCO, 2017)

In other countries, like for instance Denmark, this type of non-formal courses is reported as 'Qualifications out of scope of UOE'. Likewise, in Austria, around 10% of all apprentices are in non-formal programmes preparing for 'Berufsmatura', a new dual qualification, but since these programmes are reported as being out of scope of UOE, these students are not included in the overall enrolment figure.

The variations in classification and reporting practice at national level thus introduces additional uncertainty in enrolment data, complicating statistical comparison between countries.

3.3 Systems changes challenge the future of UOE

Besides the technical factors that complicate an analysis of the statistical figures, there is another source of changes in the enrolment figures which is of a more fundamental nature, bringing into question fundamental assumptions underlying the ISCED classification. This factor concerns the opening up of education, resulting among other things in an **increasing blurring of the borders between IVET and CVET**.

The ISCED classification, with its emphasis on well-defined levels based on duration and completion is well suited to describe an education system based on progression through initial education. This is reflected most clearly in the age-related criteria for placing an educational programme at a certain level. In line with this thinking, in the classification, VET at Level 3 is described as initial (youth) education starting at ages 14 to 16. However, the programmes that are classified at Level 3 in the ISCED mappings are extremely diverse with respect to theoretical starting age, duration, and access to the next level. As a response to this situation, ISCED 2011 introduced the notion of 'partial level completion' (see section 2.2).

However, due to globalisation and rapid technological change, labour markets at European (and global) level currently require ever more specialised skills as well as a workforce whose skills are updated throughout their working life. As a response, education stakeholders worldwide seek to increase the flexibility of education systems and open programmes up to students who are not immediately in the target group. Several systemic initiatives can be observed that underpin this movement.

One instrument that has been widely adopted with the aim of improving flexibility is modularisation. **Most European countries (21 countries) have increased modularisation in upper secondary IVET between 1995 and 2015**. Modularisation may enable disadvantaged students to access the programmes. In Italy, for example, completely individualised evening classes within VET programmes have been in place since 2014 with a reduced number of lessons (70% of the day-time curricula). In these programmes, students are divided into groups based on their prior knowledge/skill levels in a specific subject.

Modularisation not only allows for individual pathways through a specific programme, it also allows (at least in principle) IVET modules to be taken individually, allowing adults to access only those specific parts of an IVET programme that are most relevant to their job or career. However, there is no indication in the data that the increasing modularisation has led to an increase in the number programmes. This would be the result if such modules that may be followed individually, as part of continuing education, were coded individually according to the completion dimension of ISCED as 351 ('Insufficient for level completion or partial level completion'). This would arguably also place a significant administrative burden on ministries of education. From a statistical viewpoint, however, the trend towards modularisation makes it (even) more difficult to assess the reality behind the enrolment figures, since they may include young people who are full-time students for three to four years, side by side with adult students who may only be enrolled for one term or even shorter time.

Moreover, several countries have **opened up their education programmes by widening the target group to include adults, and/or by providing them as flexible distance education.** One example of this is the Spanish programme 'Ciclos Formativos de Grado Medio (distancia)' ('Vocational training – intermediate level (distance learning)'), which has a theoretical starting age at 18-65 years. There are many other such examples – in fact, ongoing research into apprenticeship for adults[4] indicates that in most European countries, apprenticeship-based VET programmes at ISCED Level 3 or Level 4 are open to adults, and

[4] 'Apprenticeship for Adults', study commissioned by Cedefop, to be completed July 2018.

that a significant share, among them we find Denmark, Finland, Ireland the UK and Spain, provides incentives for adults to participate.[5]

Still further, an increasing number of countries have introduced or are introducing systems for validation and recognition of prior learning, which allow potential students who have not completed primary or lower secondary education, to enter and participate in VET programmes. The Finnish approach is shown in Box 3-4.

Box 3-4: Competence-based upper secondary IVET in Finland

In Finland, a competence-based qualification, 'Upper secondary vocational programmes preparing for initial vocational qualifications taken as competence-based qualifications/skills examinations (including apprenticeship training programmes)' was established in 1994. The eligibility age for the programme is 18-65. The duration of the programme can vary depending on the educational background and working life experience of the student. Completion of the programme gives an initial vocational qualification.

Finally, perhaps as a result of a wish to increase the attractiveness of VET, in many countries, **upper secondary VET programmes or specific courses within VET programmes sometimes appear to have been 'upgraded' in the sense that they have been re-classified to higher ISCED levels** according to anecdotal evidence,

This has sometimes been the case, where an original VET programme has spanned more than one ISCED level, as the earlier example from Spain mentioned above (see Figure 3-1, p. 8).

In Austria, for example, the nursing and health care training programmes have undergone a reform, which has led to splitting up the training programme into programmes at three levels. Originally, both occupations trained at the nursing schools. In the last 10 years, new bachelor studies at universities of applied science have been introduced for registered nurses co-existing with the original school training. By July 2016, new legislation was introduced introducing a three-part structure (registered nurses, professional health care assistant, health care assistant) from which only the two latter are trained at nursing schools, while the registered nurses are educated at universities of applied science.

3.4 Limits to the utility for policy of UOE data - Summary

This chapter has highlighted challenges to the validity of UOE data on enrolment, particularly with relevance for upper secondary IVET. In addition to general issues pertaining to national practices in classifying educational programmes and variation in the reporting practices of individual countries, the analysis pointed to challenges to applying the ISCED orientation dimension, distinguishing between vocational and general education, to upper secondary programmes. Furthermore, modularisation within VET means that enrolment data for upper secondary VET include a non-trivial share of adults participating in one or more modules in an upper secondary IVET programme as part of lifelong learning. These challenges can be

[5] Regrettably, data for enrolment in upper secondary VET by age is not available before 2013 in Eurostat or OECD, so the available information does not allow an assessment of the effectiveness of these initiatives.

foreseen to increase as most countries report about initiatives to make education and training more flexible, ensure access to both labour markets and higher levels of education, and introduce programmes based on recognition of prior learning.

4 An alternative approach to statistical analysis of change in VET

The research questions for this research call for a description and analysis of the enrolment and completion in upper secondary VET. At a first glance, this would appear to be quite straightforward, since *enrolment* and *completion* are well-defined statistical terms. 'Enrolment' is defined as the total number of students following ('being enrolled in') an educational programme in a specific year,[6] while 'completion' indicates the number of students graduating from a specific programme that year. As the analysis of UOE and ISCED above indicates, the analysis based on these data brings into focus questions about the validity of the results, especially when used to compare the situation in different countries.

Therefore, a survey design was developed for collecting annual figures for enrolment and completion per VET programme at ISCED Levels 3 and 4 at national level (see Annex: Survey design and methodology). It was expected that this approach would most probably involve methodological challenges, first and foremost comparability issues and issues related to data availability at country level. To minimise errors caused by these challenges, the data collection process as well as the data collection tools were designed with a view to best ensure the quality of the statistical data collected and minimise sources of error.

The survey turned up several interesting findings, which can serve to deepen the understanding of the national dynamics at play in VET and VET's role in the European education system. The analysis of the results of the survey is presented in Working Paper 3.2.

[6] The notion of a *year*, however, is unambiguous. In some countries, the unit is a calendar year, in others countries it is a school year (usually August/September until May-June)

5 Conclusions and pointers for the future

Having comparable international education statistics which allow users and stakeholders a quick overview of the situation in education internationally is invaluable. The UOE data collection provides this opportunity, at least in theory, because data are comparable thanks to a common method. However, research at country level throws light on a number of critical issues and raises the question whether the data currently provided through the UOE data collection remain relevant in the analysis and comparison of increasingly more flexible and skill-oriented education systems.

Using the ISCED classification and UOE data as the basis for the survey has confirmed well-known challenges regarding the validity and comparability of international statistical data, but in addition, the results indicate that the scope of some of these challenges may be larger than has previously been acknowledged. Hence, it is pertinent to flag some of these issues with a view to future research into VET, specifically with regard to comparative studies building on UOE data as the main source. Particularly three points merit attention when analysing UOE data on VET.

Variations in reporting practice
All international statistical data collection is methodologically challenged to achieve methodological consistency and comparability. The main tool in this respect is a clear, unambiguous classification accompanied by clear, easily understandable guidelines that enable the national statistical office to undertake the collection and recording of data at country level without having to make too many assumptions and interpretations. Without any doubt, relevant tools are available for the UOE data collection. Still, despite this, the analysis has identified great variations in the countries' reporting practices.

ISCED levels and upper secondary IVET
As already explained, the variables defining an ISCED level of a programme are its *duration* (the duration of programme and cumulative duration of education since entering the education system), its *completion* (full or partial) and *access* to the next ISCED level. However, in practice, there is great variability in the way that countries apply (or do not apply) the code for completion to their programmes to the extent that some countries report programmes with partial completion as 'Out of scope UOE'.

Country practices with respect to CVET programmes at upper secondary level vary considerably. Consequently, using the three digit ISCED codes alone does not guarantee comparability of datasets.

If comparable data are needed for research or policy, a more precise picture of the situation on the ground in a particular country can be obtained by checking the three digit ISCED codes of VET programmes against the descriptions, particularly the notes accompanying each programme description in the 2011 ISCED mappings.

ISCED orientation and hybridisation in upper secondary education
The results of the current research indicate that the 'orientation' dimension of ISCED is increasingly insufficient to capture the rich picture of upper secondary education and training. In most countries, we still find programmes that may be termed 'core VET' and 'core general education', indicating that the main destination for these programmes is well-defined, i.e., the labour market in the case of 'core upper secondary IVET' and higher education in the case of

‘core general upper secondary education’. However, the analysis of changes in programme content indicates that different forms of hybridisation are on the increase. Modularisation, bridging programmes, dual qualifications, and flexible pathways – all these factors make it more difficult to ascertain whether a programme should be assigned a ‘G’ for general or a ‘V’ for vocational. This research has revealed very variable practices in this respect.

For future research aiming to establish the supply of skills for the labour market, UOE data alone cannot be regarded to be sufficient. In particular, assessing skill supply based on the ISCED orientation variable (general/vocational education) has been shown to produce quite misleading results. For this type of research, is is advisable to complement UOE data with data from other sources, such as studies of qualifications with their learning outcome descriptions in national qualification frameworks and – if available – supply side data from national labour market information systems.

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List of Abbreviations

CVET – Continuing Vocational Education and Training

ETF – European Training Foundation

EUROSTAT - The statistical office of the European Union

ILO - International Labour Organization

ISCED - International Standard Classification of Education

IVET - Initial Vocational Education and Training

OECD - The Organisation for Economic Co-operation and Development

TVET – Technical Vocational Education and Training

UNESCO - United Nations Educational, Scientific and Cultural Organization

UOE data – UNESCO OECD Eurostat joint data collection

VET – Vocational Education and Training

WBL – Work-Based Learning

Annex: Survey design and methodology

The survey design was developed with a view to ensuring reliability, validity, and comparability of the national datasets. The approach to ensuring this was to base the survey on an internationally standardised statistical classification (ISCED) and data collected in the UNESCO-UIS/OECD/Eurostat data collection (the UOE data collection)(UNESCO-UIS et al., 2015; Eurostat, 2016), which was initiated in 1999.

By asking the national experts to report in accordance with the classifications used for the international data collection, we would ensure a certain level of comparability between the national data. Also, we could avoid that the experts would have to interpret concepts in the survey. Our expectation was that the more detailed data gathered and stored in national databases would conform with these standards and classifications.

On the other hand, we also expected that there would be, to various degrees, issues concerning data availability at national level due to the extensive length of the period under study. This also turned out to be the case, particularly with respect to data for completion. However, for most countries, we were able to obtain data series sufficiently complete to discuss the trends in enrolment in VET.

Nevertheless, the responses from the national experts and their requests for clarification as well as the subsequent data analysis unearthed that questions can be raised concerning the relevance of the UOE data as a tool to assess the state of play of VET in a specific country or compare trends between countries in spite of seemingly unambiguous statistical definitions.

As described above, In the ISCED classification, *upper secondary* education is defined as education at ISCED Level 3. Based on previous experience[7], a tentative hypothesis was formulated to the effect that in a substantial share of European countries, there would turn out to exist VET programmes spanning Levels 3 and 4 still being considered 'upper secondary education' in the national context. Therefore, it was decided to include VET programmes at Level 4 in the analysis.

The conceptual basis of the survey methodology

In order that the survey would enable an assessment of the nature of the changes that have taken place and begin to make assumptions about the background or cause of the changes, it was necessary to collect data at a more detailed level in each country. Therefore, it was decided to focus on VET programmes as the unit of study. To ensure the quality of the data collection at national level, it was further decided that the data collection would be carried out by country experts, who were appointed based on their insight into national VET policy as well as their insight into and access to national education statistics. However, as 'a VET programme' is not a commonly agreed concept, there was a risk that the country experts would have difficulties delimiting programmes.

[7] We refer to work carried out in connection with analyses of learning outcomes in VET programmes and discussions with VET stakeholders and ministries in various fora.

To avoid ambiguities resulting from different interpretations, it was decided to use the delimitations of programmes in the ISCED mappings (UNESCO, 2017). As already indicated, the mappings represent a 'snapshot' of the education system and as such do not allow for an identification of changes. Their usefulness for the study comes from the fact that they do identify individual education programmes and therefore mirrors each country's mapping of its education system to the ISCED classification.

Using these mappings as the basis of a common data collection tool and protocol therefore allowed us to request that national experts record data in accordance with the definitions and delimitations used in the UOE data collection, thereby avoiding that country experts would have to make their own assessment of which data to include in the reporting.

Using the ISCED mappings as survey instruments

The ISCED mappings have the physical form of large spreadsheets, one per country, that hold rather detailed qualitative and quantitative information about all educational programmes in the country. Each programme has its own row in the spreadsheet, and the columns hold information about ISCED codes according to both the old and new classification, title of the programme in the native language and in English, duration, starting age, qualifications, enrolment (latest figure), etc.[8] The figure below is included only to illustrate the structure of the mapping - please note that only 13 columns are visible, where the mappings span 26 columns.

Source: ISCED mappings (UNESCO, 2017)

Figure 0-1: Excerpt from ISCED 2011 mapping (France)

Country	School (academic) year	New programme (from school year ..) if any	Programme number (prog.<ISCED2011 level>.<number within level>)	Name of the programme in national language	Name of the programme in English	Formal education programme (Yes/No)	Minimum entry requirements (ISCED 2011 level at 3-digits level, and qualification name if possible))	Theoretical starting age	Theoretical duration of the programme	Theoretical cumulative years of education at the end of the programme, since the start of ISCED 1	Programme orientation (G-general, V-vocational)	Position in national degree structure (ISCED-2011 levels 6 and 7 only)
1	2	3	4	5	6	7	8	9	10	11	12	13
FR	2012/2013		prog.3.1	Enseignement de second cycle professionnel du second degré conduisant au CAP ou équivalent	Vocational secondary education (2nd cycle) preparing to Certificat d'aptitude professionnelle (CAP)	Yes	244	15-16	2	11	V	a
FR	2012/2013		prog.3.3	Enseignement de second cycle professionnel du second degré conduisant à une mention complémentaire ou équivalent	Vocational secondary education (2nd cycle) preparing to Mention Complémentaire (MC)	Yes	353	17-18	1	12	V	a
FR	2012/2013		prog.3.4	Enseignement de second cycle professionnel des écoles sanitaires et sociales conduisant aux diplômes d'auxiliaires de puériculture et équivalents	Vocational secondary education (2nd cycle) in health and social services institutions, preparing to qualifications of child care assistants and equivalents	Yes	353 or significant work experience	Few are aged 18-20, most are older.	1-1,5	12-12,5	V	a
FR	2012/2013		prog.3.5	Enseignement de second cycle professionnel du second degré conduisant au brevet professionnel	Vocational secondary education (2nd cycle) preparing to Brevet Professionnel (BP)	Yes	353	18-22	2	13	V	a
				Enseignement de second cycle professionnel du second degré	Vocational secondary education (2nd cycle) preparing to Bac							

A unique Excel-based survey tool was developed for each country using the ISCED mapping for that country as a basis. All programmes below Level 3 and above Level 4 were removed from the spreadsheet. Columns for each year between 1995 and 2015 were added in order

[8] The mappings can be downloaded from http://uis.unesco.org/en/isced-mappings (scroll down, and click on 1997 or 2011 to the right of a country name).

for the country experts to record enrolment and completion data for each of these years for each education programme at Levels 3 and 4.

In addition to providing significant new knowledge about changes at programme level, the data collection and ensuing analysis did raise questions concerning the suitability of these data for policy.