Department for Education

International progression report: good practice in technical education

Final report

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Background

This report was commissioned to inform the Department for Education's review of post-16 qualifications at level 3 and below and in particular, to find out how England's post-16 level 2 compared to that in other countries.

Aims

The primary aims of this research were to:

- Map England's post-16 level 2 qualifications approach to those in other countries to understand the split between level 2 and level 3 qualifications; how level 2 content is delivered (as a separate qualification or as part of a higher level one); and how and by whom it is determined which level of qualification young people will take;
- Explore how progression through the levels is supported and encouraged in other countries;
- Examine the extent to which level 2 acts as a direct route to employment in other countries.

Methodology

Eight countries were selected which included a mix of countries with similar demographics and challenges to England and those where technical[1] education is recognised as a strength: Australia, Denmark, Finland, France, Germany, the Netherlands, New Zealand and Norway.

Evidence on the research questions in the selected countries was gathered through online searches, relevant bibliographic databases and reference searches. We also searched websites of national or regional education departments, statistical authorities and other relevant organisations and contacted country experts to determine whether they were able to provide access to additional information not in the public domain.

[1] This report mostly uses the term 'technical' but is inclusive of vocational courses and education too.

Findings

Comparison of qualification levels

Comparisons between qualifications in England and other countries is made more complex by the different ways in which qualifications are levelled (if they are levelled at all). The following table sets out our understanding of qualification levels used in other countries. This is on a 'best fit' basis, informed by level descriptors and, where these are available, countries' own assessment of equivalencies. We have not attempted to map qualifications to the International Standard Classification of Education (ISCED) levels as these define programmes in terms of the phase in which they are taken; full completion (which could involve the achievement of more than one qualification); and progression (for example, allowing entry to tertiary education) rather than providing a measure of the challenge of qualifications in terms of skills and knowledge.

Table 1: Qualification levels in the different countries

Framework	Level 2 Equivalents	Level 3 Equivalents
European Qualification Framewor	Level 3	Level 4
Australia	AQF level 3	AQF level 4
Denmark	DQF level 3	DQF level 4
Finland	None as yet	FiNQF level 4
France	RNCP level V	RNCP level IV
Germany	DQR level 3	DQR level 4
Netherlands	NLQF level 3	NLQF level 4
New Zealand	NZQF level 2	NZQF levels 3 and 4
Norway	NQF level 3	NQF level 4A

Level 2 and level 3 equivalents in technical education

The premise of this research was to see how England's post-16 level 2, consisting of over 4,000 qualifications, compared to other countries. Our examination of the upper

secondary classroom-based programmes in eight countries demonstrates that level 2 equivalent qualifications are also a significant part of the offer in all of these countries, with the exception of Finland. In Australia and New Zealand, most classroom-based technical and vocational education and training (TVET) is at England's level 2 equivalent or lower. Where these countries do differ somewhat from England is in the number of qualifications available; most have a very limited number of qualification types available at level 2 equivalency that are easily recognised by employers, although these are available in a wide range of occupational areas – in most cases where numbers are available, around 100 or more.

In Australia, Denmark, Finland, the Netherlands, Norway and New Zealand, qualifications are modularised and allow for some degree of individual flexibility in the design of learning programmes and for recognition of partial achievement should students fail to complete. 'Training Packages' in Australia, 'Vocational Pathways' in New Zealand and 'Occupational Profiles' in the Netherlands, mandated by industry, are intended to bring coherence.

In Denmark, Norway and Germany (for most occupations), an apprenticeship is a requirement. In the Netherlands, the same qualifications can be achieved through work-based or classroom-based routes. The demand of the occupational role determines level, although in all four countries level 3 equivalent is the most dominant. Attaching qualifications to precise occupational roles in apprenticeships has the benefit of ensuring learning is matched to the needs of the role and employers can easily understand what a holder of the qualification knows and can do. However, there are concerns about the extent to which early specialism develops the kind of flexibility and transferable skills needed for fast-changing, knowledge-based economies, as well as issues to do with the extent to which apprenticeship opportunities are available to all those who want them and whether employers are able to recruit suitable apprentices for all vacancies.

In France, two different level 2 equivalent qualifications are available – one is highly practical and intended for entry to employment at that level, and the other for either entry to work or for continuation to the level 3 equivalent (the BAC Pro).

Level 2 content

All countries offer opportunities for students to begin studies in an occupational area at level 3 equivalent, subject to entry requirements which vary between countries, and we assume that any lower level content is integrated within the programmes of learning. The most common requirement for entry to upper secondary TVET programmes is completion of lower secondary schooling, evidenced by some form of leaving certificate or transcript. In the Netherlands and Germany, selection processes in lower secondary largely determine the level of qualifications they can subsequently access.

Provision for young people not ready for upper secondary qualifications

Denmark offers an alternative programme for those not deemed able to complete the upper secondary TVET offer. Norway offers alternative programmes for pupils with special needs. Finland, Germany and the Netherlands have programmes that support eventual transition to upper secondary. Supporting students to move into technical education is largely the responsibility of Technical and Further Education Institutions (TAFEs) in Australia, who develop local programmes. France and New Zealand do not offer transition programmes but have initiatives in place to support students to achieve qualifications.

The relationship between classroom-based study and apprenticeships

Apprenticeships are available at the equivalents of level 2 in England in Australia, Denmark, France and the Netherlands (where they start at level 1) and Germany (where they start at level 2). In Finland, Norway and New Zealand, apprenticeships start at the equivalents of level 3 in England.

Progression from level 2 to level 3

Flexible and personalised learning pathways in upper secondary: **In Denmark, Finland**, **France** and **Germany** there is an emphasis on providing flexible and personalised learning pathways and promoting validation of prior learning at the equivalents of level 2 and level 3 in England. .

Smooth transitions between lower secondary and upper secondary: In the **Netherlands** and **New Zealand,** recent and current reforms focus on developing smooth transitions and continuous learning pathways between lower secondary and upper secondary education at the equivalents of level 2 and level 3 in England.

Subsidised training schemes: In **Australia**, the National Training Entitlement enables all working age Australians without a Certificate III (which is equivalent to level 2 in England) or higher qualification to access a government subsidised training place. Support is also available for Certificate IV (which is equivalent to level 3 in England), but this is restricted to priority industry qualifications that are intended to reflect the skills needed by employers in particular states and territories.

Adapting classroom-based courses to make them more similar to apprenticeships: In response to low completion rates and poor attainment, **Norway** is currently exploring how classroom-based courses can be adapted to make them more similar to apprenticeships. Since 2013, this has led the government to fund pilot projects designed to make alternative training more similar to apprenticeship-based learning by having a substantial amount of the training take place in the work environment of a company rather than workshops at special training centres (`praktikcentre'), most of which are run by upper-secondary schools (Aspoy and Nyen,2017).

Level 2 as a direct route to employment

Apart from **Finland**, the countries have exit points linked to recognised occupations following the achievement of technical qualifications at equivalents of level 2 in England.

In **Australia,** qualifications equivalent to level 2 in England are the basic entry requirement for a majority of occupations and many students enter employment at that point, whereas, in contrast, in **Norway** and **New Zealand** most occupations require the equivalents of level 3 qualifications. In **Denmark, France, Germany** and the **Netherlands**, recognised occupations are available at the equivalents of both level 2 and level 3 in England.

In **Finland** the first exit point for technical qualifications is at the equivalent of level 3 in England.

Exiting before completion

In **Australia, Denmark, Finland**, the **Netherlands, New Zealand** and **Norway**, programmes are modularised allowing for records of partial achievement and the subsequent completion of the qualification.

In **France**, courses are not modularised although there are opportunities for retakes and the BEP can certify partial achievement of the BAC Pro. However, school leavers entering the labour market without any formal qualifications is seen as a problem.

Modularisation is also not part of the **German** system although the success rate in the dual system was 99.4% in 2016 after retakes.

The relationship between upper secondary technical qualifications and those for adults

Qualifications taken in upper secondary are available to adults in Australia, Denmark, Norway, Finland and the Netherlands. While the same training is in theory open to adults in Germany, in practice the emphasis on initial TVET means the number accessing the dual or technical school system is very low. In France, upper secondary qualifications can be accessed through an apprenticeship, but only up until the age of 25. In New Zealand, National Certificates of Educational Achievement (NCEAs) are confined to upper secondary although, where students have gained credits towards technically-specific awards, these are the same as those taken by adults.

Conclusions

While all of the countries in this review continue to reinvent their TVET programmes to make them fitter for current labour requirements and to encourage take-up and completion, all (except Finland) continue to envisage a role for level 2 equivalent

qualifications to meet the requirements of job roles at that level and to meet the needs of a significant proportion of young people who would find it more difficult to begin or complete training at level 3.

As with England, it is possible for students to enrol on a level 3 equivalent programme immediately following lower secondary (although this is rare in Australia). In the vast majority of cases, these programmes last for three years or longer. In England, T Levels are intended to provide a route in which students are expected to reach close to full competence in level 3 occupational roles in two years, with a transition year provided prior to the T Level for those who need it.

Introduction

Policy context

The Department for Education is carrying out a review of post-16 qualifications at level 3 and below to make sure that all qualifications have a distinct purpose and are necessary, are high quality and lead to good progression. In the first-stage consultation, the government set out its intentions for each level: level 3, level 2, and level 1/entry level. Level 2 study should:

- Support as many people as possible to access and achieve level 3;
- Lead to good employment options for those for whom level 2 is an ambitious aim by age 19 or beyond.

In England, at age 16, many of those who want to pursue the technical route go straight from key stage 4 into a level 3 technical qualification. However, some start with a level 2 technical course.

Once the level 2 course is completed, students may progress onto a level 3 qualification or take another level 2 qualification (both of which could be classroom-based or apprenticeship), or enter into employment.

This research looked at how this compares to post-16 level 2 in other countries, recognising that it is not always possible to make a direct correlation between qualification levels in England and International Standard Classification of Education (ISCED) levels.

Research objectives

The primary aims of this research are to:

- Map England's post-16 level 2 qualifications approach to those in other countries to understand the split between level 2 and level 3 qualifications; how level 2 content is delivered (as a separate qualification or as part of a higher level one); and how and by whom it is determined which level of qualification young people will take.
- Explore how progression through the levels is supported and encouraged in other countries.
- Examine the extent to which level 2 acts as a direct route to employment in other countries.

The research questions this review attempts to answer are:

Issue 1: Post-16 level 2 technical study and qualifications in the countries concerned

- How do other countries differentiate between different levels of skill or challenge within technical education? Are there any instances where other countries also determine a split between post-16 level 2 and post-16 level 3 in technical routes like England and on what basis?
- How (and who) determines when a young person is 'not ready' for the upper secondary qualification – what would they study, where does this education take place, and how does this relate to the country's provision for people with special educational needs?
- For students who leave education before completing the upper secondary qualification, what proof of completion do they leave with?
- Where would we find England's post-16 level 2 content in other countries? For example, is it more commonly found in pre-16 education, or packaged up as the more basic content of a more advanced qualification?
- To what extent are the level 2 qualifications offered in the upper secondary phase also used for adults in other countries?

Issue 2: level 2 as progression to level 3

- How do other countries support more people to access and achieve the highest levels of upper secondary education? Where might we be able to learn from them?
- How do other countries incentivise progressing 'through the levels' so that even if students start at the level 1 or level 2 equivalent, they are encouraged to progress to the level 3 equivalent?

Issue 3: level 2 as a direct route to employment

- How do other countries determine and design exit points for those not able to achieve upper secondary / level 3 (i.e. exiting at a lower level)? Are they determined by a recognised occupation?
- What is the relationship between apprenticeships and classroom-based study in other countries? For example, is level 2 apprenticeship only, or is level 2 content covered as basic content in apprenticeships?

- What would the job opportunities be for a student who did not complete the level 3 equivalent?

Methodology

Recognising that the evidence for some of the research questions may not be extensive in some potential comparator countries, the initial focus was on a fairly wide range. Following preliminary searches, eight countries were selected which included a mix of countries with similar demographics and challenges to England and those where technical education is recognised as a strength: Australia, Denmark, Finland, France, Germany, the Netherlands, New Zealand and Norway.

Evidence on the key research questions in the selected countries was gathered through online searches, relevant bibliographic databases and reference searches. The review encompassed relevant reports, journal articles, books, book chapters, conference proceedings and statistics and primary data from authoritative sources, supplemented with relevant 'grey' literature where this throws light on possible areas for more robust research. We also searched websites of national or regional education departments, statistical authorities and other relevant organisations.

Having identified the information sources to be reviewed, we systematically extracted information from each source to serve as the raw material for the analysis.

In addition, country experts were contacted to determine whether they were able to provide access to additional information not in the public domain and to seek their views on whether the relative proportions of young people leaving upper secondary education with qualifications equivalent to level 2 is a concern of policy makers in their country.

Evidence was compiled and compared on each of the research questions for the selected countries, identifying commonalities/differences and what has been found to work well (or not so well) where evaluations exist on well-established approaches. We also assessed the robustness of the information used, for example based on methodological considerations and critiques by other researchers and authors. Gaps and weaknesses in the evidence have been identified.

A detailed protocol for the research is provided in Appendix A. This includes: search terms/keywords; locations/sources to be searched; the screens each study passed through for inclusion; and processes for recording references and summarising literature.

Comparison of qualification levels

Summary

Comparisons between England and qualifications in other countries is made more complex by the different ways in which qualifications are levelled (if they are levelled at all.) We have made comparisons on a 'best fit' basis and used inter-country agreements on level equivalencies where available. However, there are some differences between qualifications assigned to the same level, even where there are broad equivalencies.

National qualification framework (NQF) developments in most European countries were triggered by the publication of the European Qualification Framework (EQF) and so are influenced by the European level descriptors and levels. While some countries have largely adopted the EQF descriptors others have broadened or partly re-orientated their descriptors; these include **Denmark, Finland** and **Norway**. A third group of countries, which includes the **Netherlands** and **Germany**, see competence as the overarching concept in determining level.

Level 3 in the **Australian** Qualification Framework (AQF) is broadly equivalent to EQF level 3 and England's level 2, but does envisage a slightly higher threshold in skill levels as there is more specialism and an expectation of holders being able to respond to sometimes non-routine and unpredictable problems, which is not the case for level 2 in England or EQF level 3.

New Zealand's NZQF level 3 equates to the upper secondary TVET school-leaving certificate at level 3[2], while level 4 encompasses both the general upper secondary school-leaving certificate and trade qualifications achieved in the workplace. Part of the distinction between levels 3 and 4 of the NZQF stems from the concentration on the concept of leadership which is on a continuum of complexity starting with collaboration with others, moving to having some responsibility for the performance of others through to leadership within a profession or discipline. Responsibility for others (level 4) is thought to be not possible in the context of classroom-based learning.

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[2] The National Certificate of Educational Achievement (NCEA) is the main national qualification for secondary school students in New Zealand. Courses are designed so tasks performed by students build learning and contribute towards evidence of achievement of standards throughout the year. These may include traditional academic subjects as well as courses that count towards other qualifications in the New Zealand Qualifications Framework (NZQF), like tourism or motor engineering. When they have achieved the required number of standards and added up enough credits, they get an NCEA level 1, 2, or 3 certificate - the higher the level, the more advanced the topics. Upper secondary school completion is NZQF/ NCEA L3, although not all students will achieve this by the time they leave school. New Zealand Ministry of Education website: https://www.newzealandnow.govt.nz/living-in-nz/education/school-curriculum-and-qualifications

Norway's descriptors relate to completion of upper secondary schooling with level 4 (broadly equivalent to level 3 in England) relating to competence after typically four years study/training (half in school, half in work-based learning) and level 3 (broadly equivalent to level 2 in England).

Findings

In England, the majority of qualifications taken by 16 to 19-year-olds are regulated by Ofqual through the Regulated Qualifications Framework (RQF), which came into operation in 2015. Level 2 qualifications for 16 to 19-year-olds are either the continuation of general secondary education (GCSE retakes, predominantly) or technical qualifications that can provide entry into employment in some sectors, or lead to further study or training, including through apprenticeships. Young people in England can also study level 3 technical qualifications at age 16 without having already studied at level 2 in the same occupational area.

England is currently embarking on a period of transition in technical education for 16 to 19-year-olds through the introduction of T Levels. These are level 3 programmes which consist of a mixture of classroom-based learning and 'on the job' experience through an industry placement and will be an alternative to the academic route through A Levels and the work-based route through apprenticeships. T Levels, the first of which started to be taught from September 2020, are two-year programmes equivalent in size and demand to three A Levels and are closely based on related apprenticeship standards. The Government is also reviewing post-16 qualifications to create a simpler, more understandable system.

We have not attempted to map qualifications to the International Standard Classification of Education (ISCED) levels as these, together with their subcategories, define learning at programme level in terms of: the phase in which learning is undertaken; whether or not completion is full or partial; and available progression routes (for example, allowing entry to tertiary education). The levels do not, therefore, provide a consistent measure of the challenge of individual qualifications in terms of skills and knowledge. For example, in England, achievement of one A level would not meet entry requirements for university, whereas three would, so the number of A levels achieved would affect the assigned ISCED level. This means that qualifications in isolation cannot always be directly assigned ISCED levels and it is rare for the literature to provide ISCED equivalency at qualification level.

However, all of the countries in the review have national qualifications frameworks with associated levels and descriptors and these have been used to make comparisons with English technical qualifications.

The development and implementation of the European Qualification Framework (EQF) aims to create a common reference framework to serve as a translation device between different qualifications systems and their levels, whether for general and higher education or for TVET (European Parliament, 2008). The core of the EQF is its eight reference levels defined in terms of learning outcomes relating to knowledge, skills and autonomy and responsibility (autonomy relates to the degree of supervision required; responsibility relates to aspects such as the complexity of tasks expected to be performed and whether or not responsibility for managing others is expected). National qualification framework (NQF) developments in most European countries were triggered by the EQF and so are influenced by the European level descriptors and levels (Cedefop, 2018). While some European countries outside of this review have largely adopted the EQF descriptors, others have broadened or partly reoriented their descriptors; these include **Denmark**, **France, Finland** and **Norway**. A third group of countries, which includes the **Netherlands** and **Germany**, see competence as the overarching concept in determining level (Cedefop, 2018). The competence approach views knowledge, skills and attitudes not as atomised entities which can be judged in isolation from each other, but in how an individual combines and applies them in the context of work or learning. The ability of an individual to act in a self-directed way is seen as crucial to the understanding of competence and allows differentiation between competence levels.

Germany also differs from most European countries by tailoring their descriptors to particular sectors and qualifications, rather than writing them in a general way. The German qualifications framework (the DQR) differentiates between two categories of competence: professional and personal.[3] The term competence lies at the heart of the DQR and signals readiness to use knowledge, skills and personal, social and methodological competences in work or study situations and for occupational and personal development. Qualifications are linked to the EQF and carry both the DQF and the EQF level on certification.

Norway's descriptors relate to completion of secondary schooling with level 4 (broadly equivalent to level 3 in England) relating to competence after typically four years study / training (half in school, half in work-based learning) and level 3 (broadly equivalent to

[3] The term Handlungskomptenz (action competence) is understood as 'the ability and readiness of the individual to use knowledge, skills and personal, social and methodological competences and conduct him or herself in a considered and individually and socially responsible manner' (AK DQR, 2011, p. 4). Consequently, the German level descriptors differentiate between professional and personal competence and show how knowledge (of varying depth and breadth), skills (instrumental and systematic, linked to judgement), social competence (communication, teamwork, leadership and involvement) and autonomy (autonomous responsibility, learning and reflectiveness) come together in defining the overall competence of the individual (Cedefop, 2018).

level 2 in England) seemingly largely a deficit model, representing incompletion of upper secondary. In that sense, it is a closer match to ISCED descriptors.

Level 3 in the **Australian** Qualification Framework (AQF) is broadly equivalent to EQF level 3 and level 2 in England, but does envisage a slightly higher threshold in skill levels as there is more specialism and an expectation of holders being able to respond to sometimes non-routine and unpredictable problems, which is not the case for level 2 in England or EQF level 3.

The European Commission and the **New Zealand** Qualifications Authority (2016) agreed that level 2 of the New Zealand Qualifications Framework (NZQF) and level 3 of the EQF were equivalent. They further agreed that both levels 3 and 4 of the NZQF equated to level 4 of the EQF; NZQF level 3 equates to the upper secondary TVET school-leaving certificate (NCEA), while level 4 encompasses both the general upper secondary school-leaving certificate and trade qualifications achieved in the workplace.[4] Part of the distinction between levels 3 and 4 of the NZQF in technical qualifications stems from the concentration on the concept of leadership which is on a continuum of complexity starting with collaboration with others, moving to having some responsibility for the performance of others through to leadership within a profession or discipline (European Commission/NZQA, 2016). Responsibility for others (level 4) is thought to be not possible in the context of classroom-based learning.

Table 2 sets out our understanding of qualification levels used in other countries, together with their associated descriptors. This is on a ‘best fit’ basis and there are some clear differences between levels, even where there are broad equivalencies.

[4] Receiving the leaving certificate requires individuals to have achieved a minimum number of credits which can come from a mix of sources, including credits from general subjects such as English and maths, and credits from units of trade qualifications.

Table 2: Equivalence to level 2 in England based on level descriptors

Country	Level	Descriptor
England	Level 2	Has knowledge and understanding of facts, procedures and ideas in an area of study or field of work to complete well-defined tasks and address straightforward problems. Holder can interpret relevant information and ideas. Holder is aware of a range of information that is relevant to the area of study or work. AND/OR Holder can select and use relevant cognitive and practical skills to complete well-defined, generally routine tasks and address straightforward problems. Holder can identify how effective actions have been. Holder can identify, gather and use relevant information to inform actions.
EQF	Level 3	**Knowledge**: Knowledge of facts, principles, processes and general concepts, in a field of work or study. **Skills:** A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information. **Responsibility and autonomy:** Take responsibility for completion of tasks in work or study; adapt own behaviour to circumstances in solving problems.
Australia	AQF level 3	**Skills** Graduates at this level will have a range of cognitive, technical and communication skills to select and apply a specialised range of methods, tools, materials and information to: • complete routine activities • provide and transmit solutions to predictable and sometimes unpredictable problems. **Application of knowledge and skills** Graduates at this level will apply knowledge and skills to demonstrate autonomy and judgement and to take limited

		responsibility in known and stable contexts within established parameters.
Denmark	DQF level 3	**Knowledge** Must have knowledge of basic methodology and norms within an occupational area or field of study. Must have understanding of own possibilities for influence on the labour market and in society. **Skills** Must be able to perform practical work assignments within an occupational area or field of study. Must be able to solve professional problems. Must be able to search for and assess information relevant to a practical work assignment within an occupational area or field of study. Must be able to use professional terminology in communications with colleagues, fellow students and users. **Competencies** Must be able to take responsibility for defined work processes. Must be able to enter into interdisciplinary cooperation within the practice of an occupation or field of study. Must be able to participate actively in learning situations within an occupation or field of study.
Finland		According to the Finnish National Agency for Education, there are no qualifications at EQF level 3 equivalent.
France	RNCP level V	This level corresponds to full qualification for carrying out a specific activity with the ability to use the corresponding instruments and techniques. This activity mainly concerns execution work, which can be autonomous within the limits of the techniques involved.

Germany	DQR level 3	Level 3 describes competencies for the independent fulfilment of professional requirements in a still manageable and partially open structured learning area or occupational field of activity
Netherlands	NLQF level 3	**Knowledge** Possesses knowledge of materials, resources, facts, core concepts, simple theories, ideas, methods and processes of and associated with, a profession and knowledge domain. **Skills** Reproduces and applies knowledge. Identifies limitations of existing knowledge in professional practice and in the knowledge domain and takes action. Executes (professional) tasks that require tactical and strategic insight based on own preference and a combination of standard procedures and methods. Identifies complex problems in professional practice and the knowledge domain. Solves them systematically by identifying and using data. Asks for support in further development after reflection and assessment of own (learning) results. Obtains, processes and combines information about materials, resources, facts, core concepts, simple theories, ideas, methods and processes of and associated with a profession and knowledge domain. Communicates with peers, superiors and clients based on conventions that apply to the context and professional practice. Works together with peers, superiors and clients. Carries responsibility for results of a defined set of tasks and study.
New Zealand	NZQF level 2	**Purpose** A certificate at level 2 qualifies individuals with introductory knowledge and skills for a field(s) / areas of work or study. **Outcomes**

		A graduate of a level 2 certificate is able to: • demonstrate basic factual and/or operational knowledge of a field of work or study • apply known solutions to familiar problems • apply standard processes relevant to the field of work or study • apply literacy and numeracy skills relevant to the role in the field of work or study • work under general supervision • demonstrate some responsibility for own learning and performance • collaborate with others.
Norway	NQF level 3	Basic competence (partially completed upper secondary education) **Knowledge:** • has knowledge of important facts and concepts in his/her own subject/subject area • has knowledge of work methods, procedures and tools in one or more limited subjects/subject areas • is aware of relevant regulations and quality requirements • has an understanding of his/her own educational and work opportunities **Skills**: • can communicate and express him/herself in his/her own subject/subject area • can use relevant technology to solve subject-specific tasks • can receive and follow instructions and carry out specific tasks within the subject area

		• can be creative when carrying out tasks • can search for and use information from different sources to further his/her development in relation to future work and/or education **General competence:** • can cooperate with others in the performance of work and utilise relevant skills and knowledge • can initiate and carry out limited tasks • can seek and accept guidance in relation to concrete tasks and own technical development

Table 3: Equivalence to level 2 in England based on level descriptors

Country	Level	Descriptor
England	Level 3	Holder has factual, procedural and theoretical knowledge and understanding of a subject or field of work to complete tasks and address problems that while well-defined, may be complex and non-routine. Holder can interpret and evaluate relevant information and ideas. Holder is aware of the nature of the area of study or work. Holder is aware of different perspectives or approaches within the area of study or work. AND/OR Holder can identify, select and use appropriate cognitive and practical skills, methods and procedures to address problems that while well-defined, may be complex and non-routine. Holder can use appropriate investigation to inform actions. Holder can review how effective methods and actions have been.
EQF	Level 4	Factual and theoretical knowledge in broad contexts within a field of work or study. A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study. Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities

Australia	AQF level 4	Knowledge Graduates at this level will have broad factual, technical and some theoretical knowledge of a specific area or a broad field of work and learning. Skills Graduates at this level will have a broad range of cognitive, technical and communication skills to select and apply a range of methods, tools, materials and information to: • complete routine and non-routine activities • provide and transmit solutions to a variety of predictable and sometimes unpredictable problems. Application of knowledge and skills Graduates at this level will apply knowledge and skills to demonstrate autonomy, judgment and limited responsibility in known or changing contexts and within established parameters.
Denmark	DQF level 4	Knowledge Must have knowledge of concepts, principles and processes within the practice of an occupation or field of study or in general subjects. Must have understanding of the relations between professional problems and social/international conditions. Skills Must be able to select and apply relevant tools, methodologies, techniques and materials within an occupational area or a field of study. Must be able to identify a practical and/or theoretical problem. Must be able to assess the quality of own and others' work in relation to a given standard.

		Must be able to utilise the terminology of an occupation or field of study in communication with collaboration partners and users. Competencies Must be able to take responsibility for work processes in normally predictable work or study situations. Must be able to plan and take responsibility for own and joint work processes and results. Must be able to search for further education and training and professional development in structured learning environments.
Finland	FiNQF level 4	The Finnish National Agency for Education website states that descriptors at level 4 are in line with those in the EQF.
France	RNCP level IV	A level 4 qualification involves a higher level of theoretical knowledge than the previous level. This activity concerns mainly technical work that can be executed autonomously and/or involve supervisory and coordination responsibilities.
Germany	DQR level 4	Level 4 describes competences for the independent planning and processing of technical tasks in a comprehensive, changing learning or professional field of activity.
Netherlands	NLQF level 4	Knowledge Possesses broad and specialist knowledge of materials, resources, facts, abstract concepts, theories, ideas, methods and processes of and associated with a profession and knowledge domain. Skills Reproduces, analyses and applies knowledge. Evaluates and integrates data and develops strategies for the execution of various (professional) tasks. Identifies limitations of existing knowledge in professional practice and in the knowledge domain and takes action. Analyses fairly complex (professional) tasks and executes them.

		Recognises and analyses fairly complex problems in professional practice and the knowledge domain. Solves them systematically and creatively by identifying and using data. Learning and development skills. Develops by reflection and assessment of own (learning) results. Obtains, processes and combines broad and specialist information about materials, resources, facts, abstract concepts, theories, ideas, methods and processes of and related to a profession and knowledge domain. Communicates with peers, superiors and clients based on conventions that apply to the context and professional practice. Works together with peers, superiors and clients. Carries responsibility for results of own activities, work and study. Carries partial responsibility for the results of the work of others.
New Zealand	NZQF levels 3 and 4 [5]	*Level 3 covers secondary school leaving certificate (NCEA)* Purpose A certificate at level 3 qualifies individuals with knowledge and skills for a specific role(s) within fields/areas of work and/or preparation for further study. Outcomes A graduate of a level 3 certificate is able to: • demonstrate some operational and theoretical knowledge in a field of work or study • select from and apply a range of known solutions to familiar problems

[5] This subdivision is largely because of the view that exercising responsibility for others is seen as a distinguishing feature of this level in New Zealand, but one which cannot be demonstrated in the classroom-based route. Therefore, the level equivalent to level 3 in England is subdivided, with level 3 relating to classroom-based certificates and level 4 relating to the work-based trade certificates.

		• apply a range of standard processes relevant to the field of work or study • apply a range of communication skills relevant to the role in the field of work or study • apply literacy and numeracy skills relevant to the role in the field of work or study • work under limited supervision • demonstrate major responsibility for own learning and performance • adapt own behaviour when interacting with others • contribute to group performance. *Level 4 covers trade qualifications* Purpose A certificate at level 4 qualifies individuals to work or study in broad or specialised field(s)/areas. Outcomes A graduate of a level 4 certificate is able to: • demonstrate broad operational and theoretical knowledge in a field of work or study • select and apply solutions to familiar and sometimes unfamiliar problems • select and apply a range of standard and non-standard processes relevant to the field of work or study • apply a range of communication skills relevant to the field of work or study • demonstrate the self-management of learning and performance under broad guidance

		• demonstrate some responsibility for performance of others.

Level 2 and level 3 equivalents in technical education

Summary

- All of the eight countries have provision equivalent to level 2 with exception of **Finland**. In **Australia** and **New Zealand**, most classroom-based TVET is at level 2 equivalent or lower.
- In **Australia, Finland, the Netherlands** and **New Zealand**, qualifications are modularised and allow for some degree of individual flexibility in the design of learning programmes. 'Training Packages' in Australia, 'Vocational Pathways' in New Zealand and 'Occupational Profiles' in the Netherlands, mandated by industry, are intended to bring coherence.
- In **Denmark, Norway** and **Germany** (for most occupations), an apprenticeship is a requirement for completion of related qualifications. In the **Netherland**s, the same qualifications can be achieved through work-based or classroom-based routes. The demand of the occupational role determines level, although in these countries level 3 equivalent is the most dominant.
- In **France**, two different level 2 equivalent qualifications are available – one is highly practical and intended for entry to employment at that level, and the other for either entry to work or for continuation to the level 3 equivalent (the BAC Pro).

Findings

Proportions of young people in TVET in schools exiting at different qualification levels

Figures are not available for **Denmark**, **France**, **Finland**, **Germany**, the **Netherlands**, **New Zealand**, or **Norway**[6]. There are a number of reasons for this, including:

- In Finland, there are currently no qualifications on the FINQF at the equivalent of level 2 or below in England and the country's Cedefop representative stated that they "do not have any exact plans to introduce level 2 qualifications";
- In the other countries graduation from level 2 versus level 3 equivalents does not feature as a concern so is not reported;

[6] This was confirmed through direct contact with relevant contacts in the countries concerned.

- In the Netherlands, students do not graduate by class at the same time in a school year.

In **Australia**, published figures are only available for 15 to 19-year olds participating in TVET in schools 2017. These show that in 2017 just under two-thirds were participating in programmes at level 1 equivalent (Certificate I) or below programmes, while a third were on level 2 equivalent (Certificate III) programmes and just over one per cent were participating in level 3 equivalent (Certificate IV) programmes.[7]

Length and educational phase of technical programmes

None of the countries in the review offer accredited technical qualifications in the lower secondary phase, although streaming at age 12 in the Netherlands may put pupils on the technical track which includes a degree of technical orientation. For mostyoung people, technical education begins at age 15 or 16.

Duration of training in most countries varies according to both the level and the occupational specialism. While in New Zealand, students typically move up through the levels, in most countries, they start on a programme leading to a particular occupation and exit level.

Level 2 equivalent training takes one to two years in Germany; two years in France and Norway; around two and a half years in Denmark; and two to three years in the Netherlands.

Training leading to level 3 qualifications takes around three years in Finland, France, Germany; three to four years in the Netherlands; four years in Denmark and Norway. In all cases, there are variations depending on individual circumstances and the specialisms chosen; however, none typically have level 3 equivalent qualifications of only two years' duration as is the case in England.

The modularised system in Australia and New Zealand makes it difficult to assign duration to any one level of technical qualification as students may be accumulating credits at different levels towards different qualifications. Credits achieved through technical education can be recognised in the upper secondary school leaving certificate

[7] Misko et al. (2019) report that: "While secondary school VET students in the 15 to 19 years age group are more likely to undertake certificate I and II qualifications (mainly certificate II qualifications), post-school VET students in the 15 to 19 years age group are more likely to undertake certificate III and higher qualifications. During the last few years, however, we have seen an increase in the uptake of certificate III qualifications by secondary school VET students (…) The increased uptake of certificate III qualifications by secondary school VET students noticed in recent years may signal the intention of state curriculum authorities to concentrate on higher-level skill qualifications for the completion of secondary school certificates. That said, another possible reason may be that schools are seeking to ensure that students enter the workforce with some higher-level skills, making them more marketable to employers".

in both countries. In New Zealand, this is the NCEA level 2 after two years of upper secondary and the NCEA level 3 after three years (levels 2 and 3 equivalents respectively). The situation in Australia is more complex. The upper secondary phase lasts only two years and each State and Territory sets its own leaving certificate. These are often available at different levels and have their own requirements for what is classed as successful completion of years 11 and 12, including the mix of credits from general and technical education.

Table 4: Length and phase of technical programmes

	Age at start of programmes	Length of programmes	Notes
Australia	Technical education starts in years 11 and 12 (students are typically aged 16).	Australia operates a modular system. Secondary students undertaking TVET courses may complete a full TVET qualification, or some units of competency from within a qualification. Students who start a TVET qualification may complete it while at school or after they have graduated. They may combine TVET units with some academic studies. Credit from TVET units contribute to students' overarching school leaving certificate.	State and territory governments are responsible for delivering and regulating classroom-based education. Minimum school leaving ages vary between 15 and 17 years-old.
Denmark	Technical education starts at ages 15 to 16, after the end of compulsory education	Between two and a half to six years, but typically around two and half years for EQF 3 (level 2 equivalent) and four years for EQF 4 (level 3 equivalent)	Technical education starts with a Basic programme of 1 year, then a main programme of varying length depending on the level of training (one and a half years for level 2

			equivalent and up to five years for level 4 equivalent training.
Finland	After compulsory schooling, from age 16	Duration varies depending on the individual's competence development plan. On average, it takes three years to complete a level 3 equivalent qualification.	There is no age restriction on upper secondary, although most students are aged 16 to 25. Admission is not confined to the start of the school year. The modularised approach enables students to build towards full competence over time and to combine units achieved in school with those achieved in the workplace.
France	Age 15, after lower secondary, although almost a third of students retake their last year of lower secondary and start aged 16.	Two years for level 2 equivalent qualifications (CAP/BEP). Three years for the level 3 equivalent BAC Pro (four years in total for those opting initially for the CAP).	The BEP was once a stand-alone qualification but now represents an opportunity to gain recognition of level 2 equivalent skills for those studying for a BAC Pro. The BAC Pro can be taken by those with a CAP in a related field with an additional two years of study.
Germany	From age 15	From two to three and a half years in the dual system depending on the level of qualification associated with the occupation. At technical schools, training is from one to three years, again depending on the technical specialism and level. Level 3 equivalent training is typically	Some technical grammar schools offer educational programmes leading to both an academic qualification (leading to tertiary education) and a technical qualification. These programmes last from three to four years.

		around three years in both routes.	
Netherlands	From age 16	MBO 3 (level 2 equivalent) lasts from two to three years. MBO 4 (level 3 equivalent) lasts from three to four years.	When they start secondary school at age 12, pupils are entered into one of three streams: VMBO (preparatory secondary technical education). A four-year technically-orientated stream focused on practical knowledge, which leads to technical training (MBO). HAVO (senior general secondary education). A five-year middle stream that prepares students to study higher professional education at universities of applied sciences (hogescholen), where they can follow a bachelor's degree in applied sciences (HBO). VWO (university preparatory education), a six-year education stream with a focus on theoretical knowledge, that prepares students to follow a bachelor's degree (WO) at a research university.
New Zealand	Age 15/16	Typically, two years to achieve a level 2 NCEA (upper secondary certificate) and three years to achieve a level 3 NCEA (equivalent to levels 2 and 3 in England respectively).	The NCEAs are credit based and awarded when students achieve the minimum number of credits required at that level. Credits can come from a range of academic and, technical subjects (for example, maths,

			computing, motor engineering). The same credits can also be used towards the achievement of technical qualifications.
Norway	From age 16	Level 3 in the Norwegian Framework is described as basic competence, representing a partially completed upper secondary education, two years in duration. Typically four years – two years in school, followed by two years of apprenticeship training for level 3 equivalent.	While there are no technical qualifications in lower secondary, students have the opportunity to try different upper secondary subjects, including TVET, through taster courses. Basic competence (level 2 equivalent) represents achievement of the classroom-based component of the upper secondary TVET programme. At this point, young people may not be able to find an apprenticeship place or decide not to continue in the technical area. They can take a year's course to switch to the general route and qualify for university admission. The training candidature scheme allows low-achieving students to sign a training contract after the two years at school rather than an apprenticeship (though they can switch to the apprenticeship route with the support of their employer). The scheme requires candidates to complete a limited number of the competencies for the

			trade/journeyman's certificate and is not part of the NQF so the level is unclear.

Level 2 and level 3 programmes

Australia operates a modular system for TVET based on 'training packages' developed by industry. They are made up of three types of training products:

- **Units of competency (UoCs)**: consist of skills and knowledge requirements aimed at meeting an identified learning outcome, to be applied in the workplace.
- **Qualifications**: specified groups of units of competency which make up formal certifications, ranging from Certificate I to Graduate Diploma levels, aligned to the Australian Qualifications Framework.
- **Skill sets**: specified, small groups of units of competency which form recognised skills or knowledge areas required by industry, regulation or licensing purposes.

Students can achieve full qualifications (certificates) at one of four intermediate Australian Qualification Framework levels (equivalent to UK entry level to level 3) but components can also be certified at modular level which can supplement skills profiles or build into full qualifications over time (UKCES, 2012). The same modules may appear in more than one occupational certificate within a broader training package.

Apprenticeships and traineeships can be full-time, part-time or classroom-based. Traineeships were introduced in the 1980s and extended the traditional apprenticeship model to non-trade occupations (for example, occupational roles in retail) under the banner of 'traineeships'. As the skill requirements are usually much less than in traditional trades, the duration of the training contract for traineeships is correspondingly lower - six months to two years but typically a year - and the level of training is lower, usually the equivalent of AQF certificate II or III (Level 1 or 2 equivalent). All qualifications that are the basis of Apprenticeships can be accessed outside an Apprenticeship contract through a school (known as VET in Schools), private training provider or through a Technical and Further Education institution (TAFE).

Clarke (2012) noted that students participating in classroom-based apprenticeship and traineeship qualifications risked weak outcomes and unrewarding transitions, especially for those taking certificates at level II or below (level 1 equivalent), which have little credibility with employers.

In **Denmark**, technical upper secondary education and training typically starts with a classroom-based foundation course. The basic programme consists of two basic courses of twenty weeks each (half a year). The first course provides general education in subjects such as Danish, Information Technology and languages as well as broad technical skills. It also supports students to make the decision about the occupational area in which to specialise. The second basic course is targeted at the main course in a specific TVET programme (European Commission, 2019). Young people who start a TVET more than one year after they have completed school years 9 or 10 can go straight to the second part of the basic programme. The main subject areas for the second part of the basic programme, which were established when the system was reformed in 2015, are:

- Care, health and pedagogy
- Office, trade and business service
- Food, agriculture and experiences
- Technology, construction and transportation

The basic programme alone does not provide students with the necessary qualifications to enter the labour market. However, having completed a basic programme, students are eligible to enter one of more than a hundred main programmes, each leading to a specific full technical level 3 equivalent qualification.

The main programme of the Danish TVET is based on the alternating principle which means students must combine classroom study with work-based learning; students must therefore have a training agreement with an approved company which offers training although it is sometimes possible for the training agreement to be with the college where practical training is also provided. The main programme typically takes three to three and a half years, but can be shorter or longer for certain programmes. Main programmes are offered at DQF level 3 (one and a half years) (equivalent to level 2 in England), at DQF level 4 (three years) (equivalent to level 3 in England) and some programmes at DQF level 5 (five years) (equivalent to level 4 in England).[8] TVET-programmes are normally completed with a journeyman's test or a similar examination testing technical knowledge, skills and competences. However, the full programme has several 'steps' (trin) and specialisations, each corresponding to a specific position in the labour market, which enable students to step off the programme with a lower qualification, although they can

[8] Ministry of Education website https://eng.uvm.dk/upper-secondary-education/vocational-education-and-training-in-denmark Accessed 10/11/19

come back to training for higher levels subsequently if they wish (Andersen and Helms, 2019).

Technical education at the upper secondary level in **Finland** is modular and takes three years to complete and can be done either in a technical school or as apprenticeship training. The Finnish qualification framework sets the outcomes of technical training at level 4 (L3 equivalent). Currently there are no level 2 equivalent qualifications on the framework but work to map all course outcomes continues and it is likely preparatory training for upper secondary will be placed at level 3 (equivalent to level 2 in England) in the FiNQF (Finnish National Agency for Education, 2018).[9]

There are three types of competence-based technical qualifications. In order of increasing level of difficulty, these qualifications are technical qualifications (equivalent to level 3 in England), further technical qualifications (equivalent to level 3 in England but which are more specialised than technical qualifications) and specialist technical qualifications (equivalent to level 4 in England) (Finnish Ministry of Education and Culture, 2015, 2018) Cedefop, 2015). All qualifications are composed of units of learning outcomes. Technical qualifications consist of technical units and common units. Further and specialist qualifications comprise only technical units.

TVET providers are responsible for organising training in their areas, for matching provision with local labour market needs, and for devising curricula based on national qualification requirements. They also decide independently on issues such as type of education and training provided and the method for completing studies, within the limits of their authorisation from the education ministry (Cedefop, 2016).

The duration of studies varies depending on the personal competence development plan drawn up for each student at the beginning of the TVET programme, usually within the first weeks. The plan is drawn up by the teacher or guidance counsellor together with the student and, when applicable, a representative from the world of work. It has to be updated during studies, as needed. This plan includes information on various aspects: identification and recognition of prior learning; how and which skills need to be acquired based on the student's current competence and the qualification requirements; how competence demonstrations and other demonstrations of skills will be organised; and what guidance and support may be needed. The plan includes information on necessary supportive measures, such as language, mathematics and digital skills training. Based on this approach, students only study what they do not yet know. The language of instruction is decided in the licence to provide TVET, granted by the Ministry of Education

[9] Finnish National Agency for Education website Accessed 2/11/19 https://www.oph.fi/en/education-and-qualifications/qualifications-frameworks

and Culture. In addition to the official languages of Finnish and Swedish (and Sámi in relevant language regions) the instruction can be given in a foreign language. A TVET provider may be a local authority, municipal training consortium, foundation or other registered association or State-owned company (Cedefop, 2019).

The initial technical curricula were reformed in the late 2000s to further orient initial TVET curriculum towards the competence-based approach. The curriculum now encompasses 180 competence points (students typically achieve 60 of these in each of the three years of upper secondary TVET) which can be completed through skills demonstrations in real working life situations at the workplace and assessed jointly by the provider and an employer (Finnish National Agency for Education, 2018). However, Virolainen and Stenström (2015) raise concerns about the development of TVET students' academic skills and preparedness to continue to higher education in a competency-based system which may not assess evaluation and writing skills.

France offers both level 2 and level 3 equivalent technical qualifications in upper secondary. Level 2 equivalent qualifications include the Certificat d'aptitude professionnelle (CAP) and the Brevet d'enseignement professionnel (BEP). The BAC Pro is at level 3.

For the CAP, students take theoretical classes and do practical work in a workshop, a laboratory or on a construction site according to their specialty. The general lessons (such as French, maths, civics) and the technical and professional lessons are evenly balanced. A period of 12 to 16 weeks in a company is mandatory to reinforce the professionalisation of the training. There are over 200 CAP courses that can be followed which are linked to level 2 equivalent job roles.

Whereas the CAP is more technically focused and develops practical skills, the BEP is more theoretical with a greater component of general education, intended primarily for those wanting to continue their studies to achieve the Baccalauréat professionnel (BAC Pro). Formerly, students could enrol on two-year courses linked to either the CAP or BEP, with those wishing to continue to the BAC Pro from the BEP doing so in an additional two years of study. Since 2009, there has been no specific programme leading to the BEP in favour of reducing the time taken to achieve the BAC Pro to three years for all, but students preparing for the technical Baccalauréat may take a BEP exam if they wish, usually at the end of the second year, to assess their work-related competences in particular occupational specialisms (for example, butchery or vehicle maintenance).[10]

[10] Ministry of Education website https://www.education.gouv.fr/cid2573/la-voie-professionnelle-au-lycee.html Accessed 2/11/2019

The BEP can also be taken outside of the school system by those in work wishing to certify their professional skills.

Other students enrol directly for the technical baccalaureate - BAC Pro - over three years which, as a level 3 equivalent qualification, allows entry into the workplace or higher-level study. The technical baccalaureate offers nearly 100 specialisms in a wide variety of sectors (retail and wholesale trade, services, catering, maintenance, administration, accounting, construction, agriculture etc.), and in highly specialised sectors (watchmaking, jewellery, fashion). The main purpose of the technical baccalaureate is entry to the job market. However, it also enables students to move on to higher education, particularly at University Technical Colleges. The lessons are based on the mastery of professional techniques. Students do practical work in the workshop or classroom and several months of internships in companies. The training also includes general lessons. Students take courses in French, History-Geography and Moral and Civic Education (EMC), Mathematics, Living Language, Physical Education and Sport, Arts Education and Specialty, Physical and Chemical Education or a Second Language (Cedefop, 2014; Euroguidance Network, 2014).

Schools will not offer the full range of options and some will specialise in a particular occupational area such as construction. "*Lycée des métiers*" is a label of excellence awarded to over 800 technical high schools. All qualifications can be studied through the classroom-based route or through an apprenticeship in a *Centre de Formation pour Apprentis* (CFA **–** apprenticeship training centre**)**.

Cereq (2015) noted that, three years into their working lives, the unemployment rate among the young people who completed secondary technical education in 2010 was 24 per cent. Holders of the CAP and BEP were particularly vulnerable, calling into question the value of these qualifications.

In **Germany**, intermediate TVET consists of three parts: (i) dual apprenticeship training with a focus on company-based training; (ii) technical training at full-time technical schools; and (iii) the transition system for those who do not fulfil the entrance requirements for full-time technical schools or have failed to obtain an apprenticeship position. Assigning levels to apprenticeships has been complex but it is now generally recognised that those where the training takes place over two years are at EQF level 3 and those taking three years or more to complete are at EQF level 4, equivalent to levels 2 and 3 in England respectively. Full-time classroom-based technical programmes cover a period of one to three years, depending on the occupation, and are mainly for intermediate-level occupations in sectors such as health, social work, and media, including nurses, kindergarten teachers, medical assistants (EQF levels 2-4; levels 1-3 equivalent) (BIBB, 2015). The training route is defined by occupation, the work-based and classroom-based routes do not serve as alternative training sites for the same occupations in Germany (unlike in Denmark) (Solga et al., 2014).

The three segments of Germany's TVET system differ in their educational composition. The majority of participants in the dual system, and even more in the classroom-based segment, hold an intermediate or upper secondary school leaving certificate, while those with no or only a lower secondary leaving certificate make up the majority of participants in the transitional system. Formal educational requirements for entering the dual system are very low but young people are dependent on firms' recruiting policies and, in reality, lower secondary school leavers make up the majority of trainees in (low-paying and insecure) crafts, agriculture, and lower-skilled service jobs (e.g., shop assistant or hairdresser). In (well-paying) industry, commerce and public service occupations, most trainees hold an intermediate school certificate and increasingly even an upper secondary school certificate. In the classroom-based TVET sector, access to programmes is often formally restricted to those holding intermediate or even upper secondary school-leaving certificates (Solga et al., 2014).

The major advantage of the German system is the close link between training and company needs; the major disadvantage, however, is that the system has gradually become less responsive to the needs of the economy due to:

- the transition to a knowledge-based economy which often creates greater demands for theoretical than for practical knowledge;
- the ageing of the workforce which creates the need for lifelong learning as well as initial training;
- economic and technological change which can devalue initial technical training and create a demand for people with transferable skills;
- increasing mismatch between apprenticeship places available and suitable applicants (UKCES, 2012; Hippach-Schneider and Huismann, 2019).

To counteract some of these issues, a major campaign *Vocational training – practically unbeatable* promoting all forms of TVET through various media was carried out from 2011 to 2015 to attract more young people to TVET (Cedefop, 2018). Despite this, the apprenticeship market continues to be characterised by increasing matching problems. Vacant positions in 2017 increased by 12.6 per cent compared with 2016; on the other hand, the share of unsuccessful applicants as a proportion of the officially identified demand for 2017 is still comparatively high – but stable, at 13.3 per cent. The skilled crafts and trades sector were particularly affected by a shortage of applicants (Hippach-Schneider and Huismann, 2019), driven in part by regional economic imbalances and the typical lack of mobility of 16-17-year-olds (Solga et al., 2014).

A pact to create an alliance for promoting initial and continuing technical training 2015-18 (Allianz für Aus- und Weiterbildung) was signed in December 2014 between the federal government, the federal employment agency, industry, trade unions and regional

governments. The alliance aimed to encourage young people to take up in-company training and promote the attractiveness of TVET. In parallel, the Federal Institute on TVET (BIBB) in 2015 started 12 pilot projects aiming to ensure the sustainability of TVET. With a EUR 6 million budget, the projects intend to develop technical competences. Up until 2019, they will experiment and evaluate relevant curriculum concepts, digital teaching, learning materials and examination questions for IVET and continuing technical education and training (CVET) (Cedefop, 2018).

In the **Netherlands**, the senior secondary technical education certificate is known as the MBO. The training lasts between six months and four years and is divided into four levels of the NQLF (MBO 1 - MBO 4). Most classroom-based students in upper secondary TVET programmes are in MBO (level) 4 programmes (equivalent to level 3 programmes in England) (Dutch Inspectorate of Education, 2018). The different levels vary in terms of duration, access requirements, qualification level and technical skills. Students can acquire technical qualifications for a recognised occupation at the equivalents of level 1, level 2 and level 3 in England. These levels are designated basic technical training, professional training and middle management training respectively:

- Assistant training at MBO level 1 (equivalent to entry level in England). It lasts 1 year maximum. It is focused on simple executive tasks. If the student graduates, he/she can apply to MBO level 2.

- Basic technical training at MBO level 2 (EQF level 2), which is equivalent to level 1 in England, involves students enrolling on one or two-year courses in order to train for practical occupations such as hairdresser or mechanic.

- ‘Professional training’ at MBO level 3 (EQF level 3), which is equivalent to level 2 in England, involves students enrolling on two to three-year courses in occupational fields such as a nursing assistant or head mechanic.

- ‘Middle-management training’ at (MBO) level 4 (EQF level 4), which is equivalent to level 3 in England, involves students following courses that have a duration of three to four years to train for jobs such as store manager or rehabilitation technician. Students who successfully complete courses at this level can go on to higher professional education (HBO) (Cedefop, 2016; Eurydice, 20 July 2018).

An example of a qualification equivalent to level 2 in the Netherlands

Service mechanic installation technicians work in the technology sector and for fault clearing services or for the maintenance department of production, installation, service, and retail businesses.

The MBO training to become a service mechanic installation technician is provided at level 3 in both options: the classroom-based (BOL) and the work-based (BBL) tracks. The average duration of the training leading to a certificate comprises four years (4,800 study hours) and depends on previous educational attainment. The minimum entry requirement is the completion of the VMBO (the lower secondary prevocational qualification which may be an advanced combined, theoretical or combined programme, depending on the educational stream to which children have been assigned post-primary) or a comparable level (i.e. MBO level 2).

Career opportunities for service mechanic installation technicians are as project coordinators or managers within a service and maintenance department (neither of which require further training). Moreover, they can be promoted to become a Service Technician (fitting techniques, gas/heating).

In addition to these four training levels, MBO schools also offer one-year specialist training for students who have completed an MBO 3 course (equivalent to level 2 in England).

The competency-based, modularised national qualification framework for MBOs include 237 occupational profiles which describe the skills, competencies and knowledge a person needs to fulfil a job or a work task. The responsibility for qualifications design is held by knowledge centres. Employers input into their design via occupational and qualification profiles, which are collected and collated (sometimes by a third party e.g. a research institution) and are used as the basis for a new design. This process sees an occupational profile developed, based on identifying what an experienced professional would do in their role. Following this, the types of competencies that someone would need to start their professional career are then mapped out to create a qualifications profile. This approach results in a competence-based qualification structure (Casey, 2013; Cedefop, 2016).

After completing MBO level 2, graduates hold the ‘official’ minimum requirements for work and success in the labour market. Graduates from MBO level 4 can go on to higher technical education (HBO).

MBO participants at all levels can choose between two learning pathways: i) a classroom-based technical pathway (BOL), either full-time or part-time at technical

schools, which includes practical elements/internships at companies, or ii) a work-based technical pathway (BBL) which is equivalent to dual apprenticeship training with a focus on work-based training in companies. Both technical pathways result in the same certificates.

However, a high degree of selection operates within earlier phases of education which determines whether students follow an academic or one of the iVET (classroom-based or apprenticeship) routes. While pathways exist to allow movement between the academic and technical tracks, in practice few students make use of this, and most stay in the track determined for them during the primary/early secondary education phase (UKCES, 2012; Casey, 2013; O'Donnell and Burgess, 2017).

In years 11 to 13 (ages 15/16 to 18), students in **New Zealand schools** study a number of courses or subjects. These may include traditional academic subjects as well as courses that count towards other qualifications in the New Zealand Qualifications Framework (NZQF), like tourism or motor engineering. In each subject, students are assessed through classroom work and exams against a number of standards. When a student achieves a standard, they gain credits. When they have achieved the required number of standards and added up enough credits, they get an NCEA level 1, 2, or 3 certificate. As qualifications are modularised, students do not necessarily have to choose between earning a technical certificate or an academic certificate. For example, unit standards in the domain "generic computing" might be used towards a level 2 NCEA certificate, as well as towards a National Certificate in Computing (level 2).

Most Year 11 students start at level 1, and progress to level 2 in Year 12, and level 3 in Year 13. Schools may allow students to study a mix of standards at different levels, depending on a student's ability. For example, a Year 12 student may do most courses at level 2, but start a new course at level 1 or study another course at level 3 because they have a particular aptitude.

Alongside NCEA Level 2, Vocational Pathways were launched in 2013 to offer additional options to students and support them in their transition from school to employment. Achieving a Vocational Pathways Award means that students have achieved the standard in a coherent program that aligns their skills with those that employers are looking for within six broad industry groups: primary industries, manufacturing and technology, service industries, creative industries, social and community services, and construction and infrastructure.

However, in a consultation document, the Government of New Zealand noted that:

> "Our current technical education system is poorly positioned to deliver on our future needs. Technology continues to change the world in which we live, learn and work, both onshore and overseas, and these changes are likely to accelerate. Automation will change the nature of work in New Zealand, with around a third of

current jobs likely to be significantly affected. As these jobs change, other new jobs will emerge. However, people with no or low qualifications are most likely to see their jobs become extensively automated, and many will find it difficult to adapt to new jobs and new technologies." (Ministry of Education, New Zealand, 2019)

As a consequence, the Government is proposing three major reforms:

1. To redefine the roles of education providers and ITOs, and extend the leadership role of industry and employers across all technical education through new Industry Skills Bodies.

2. Create an institution, with the working name of the New Zealand Institute of Skills & Technology, bringing together 16 public Institutes of Technology and Polytechnics (ITPs) as a single entity.

3. Create a unified technical education funding system, removing barriers to collaboration and flexibility, ensuring a sustainable network of provision, and supporting the wider reforms.

In **Norway**, compulsory education / training ends following completion of lower secondary education at age16. However, every pupil aged 16-19 who has completed the lower secondary level is entitled to upper secondary education or training leading to university and college admissions certification or to a technical qualification (Norwegian Directorate for Education and Training 2016). Upper secondary technical education in Norway provides three years of general education or four years of technical training, with students choosing from five general study programmes and eight general technical programmes (building and construction; design, arts and crafts; electrical trades; healthcare, childhood and youth development ; agriculture, fishing and forestry; restaurant and food processing trades; service and transport; technical and industrial production).

Most apprenticeships follow a 2+2 model, which entails two years of education in school (VG1 and VG2), followed by two years of formalised apprenticeship training. After two years of apprenticeship training, students take a practical-theoretical examination and successful candidates are awarded a trade certificate (fagbrev) for industrial and service trades or a journeyman's certificate (Svennebrev)) for traditional crafts. The two certificates are both at NQF level 4 (Cedefop, 2017).

Alongside these routes is the 'training candidate scheme', which targets people who for various reasons struggle to meet the requirements for the trade or journeyman's certificate. The scheme provides students with the possibility of achieving a specially adapted qualification of a lower level (EQF3, English level 2 equivalent) than a trade or journeyman's certificate, which are at EQF level 4 (equivalent to level 3 in England).

There is no statutory right to an apprenticeship placement and some students do not manage to get an apprenticeship contract in a training enterprise. For these students, county authorities are required to provide practical classroom-based training as a substitute for an apprenticeship placement.[11] This alternative route is costly for the counties (that are responsible for funding TVET) and TVET schools, and 3+0 pupils (i.e. those who complete 3 years in technical school with zero years in on-the-job training) often perform less well in their trade and journeyman's examination than apprentices (Cedefop, 2017).

From 2020 there will be a number of reforms to the Norwegian TVET system. Currently, technical students cannot start specialising before reaching the second year of TVET school. In vg1, students study 'common core' subjects (maths, language etc.) and technical study related to the broad subject area. In vg2, they begin to specialise in narrower sectors (for example, food and beverages) but it is not until vg3 (the apprenticeship placement) that they fully specialise in an occupational role. Feedback from industry is that students do not have enough knowledge in their chosen subject before becoming apprentices. Students of different TVET subjects, such as hairdressing and boat building, are in the same class and follow the same curricula and training, so some subjects are irrelevant to them. Mandatory subjects in all technical programmes are Norwegian, Mathematics, Natural Sciences, English, Social Science and Physical Education.

From 2020, the new TVET programme will bring students with similar professional skills together. The aim is that education will be better suited to the labour market needs. More students will be offered specialisation in the first year. Several programme areas will be split in the second year of upper secondary school to increase specialisation. For example, the second year in food and beverages will be divided into two areas: baker and confectioner, and industrial food production.

The government will expand the number of TVET education programmes from eight to 10 to group students with shared curriculum content. The new TVET education programmes from 2020 will be:

- building and construction
- electronics
- health and youth development

[11] Eurydice website accessed 4/11/19 https://eacea.ec.europa.eu/national-policies/eurydice/content/organisation-general-upper-secondary-education-39_en

- agriculture
- restaurant and food
- technical and industrial production
- design and traditional crafts
- ICT and media production
- sales, service and tourism
- hairdressing, floral and interior design

Employability skills

Transferable employability skills are generally built into technical qualifications in the comparator countries, rather than delivered as distinct qualifications. In **Australia,** for example, employability skills are built into (many) certificate III (level 2) TVET programmes. This is exemplified by Misko et al. (2019), who recently examined a selection of Certificates I, II and III qualifications in order to establish the frequency with which non-technical skills were identified as skills and knowledge to be developed in units of competency. They found that non-technical skills (of communication, teamwork, problem-solving, initiative and enterprise, planning and organising, self-management, learning, technology, and occupational or workplace safety skills) are generally well covered, with evidence that these skills are to be taught in certificate I, II and III levels in the training packages studied (Misko et al., 2019: 46). They also found that:

- Skills identified at the certificate I level were more generic and contained a broader spectrum of activities than the higher-level qualifications;
- The activities to be covered in certificate II and III qualifications tended to become more industry specific;
- The generic technology skill tended to develop in complexity as qualification levels increased; this could explain the decrease in observations of this skill beyond certificate I level;
- Learning as a skill was also observed less frequently beyond certificate I. The researchers suggest that fewer instances were observed because it may be perceived as a foundation skill by training package developers and writers. As qualification levels increased, learning became an applied skill in the more complex contexts of certificates II and III (Misko et al., 2019: 46).

There is also a standalone Certificate III in Business (equivalent to level 2 in England), which is designed for "individuals who apply a broad range of competencies in a varied work context using some discretion, judgement and relevant theoretical knowledge" (Training.gov.au, 2019).[12] Possible job titles relevant to this qualification include: customer service adviser, data entry operator, general clerk, payroll officer, typist and word processing.[13]

Newton et al. (2017) report that, in **Denmark**, there is some emphasis on common skills across its 12 technical routes, which are gained through the completion of basic courses focused on knowledge and skills common to several qualifications within an occupational 'branch'. These precede main courses which are oriented towards occupationally specific outcomes. The purpose of the first part of the basic programme (GF1 – Grundforløb 1) is that students should acquire broad technical and general skills enabling them to combine practice and theory within the broad occupational field. This makes students more qualified to make a choice with regard to their future occupations. The purpose of the second part of the basic programme (GF2 – Grundforløb 2) is to prepare students for the main programme and give the students the prerequisites for completing the main course (Apprenticeship Toolbox, 2018).

In **Finland**, all technical qualifications include the following key competencies for lifelong learning:

- Digital and technological;
- Mathematics and science;
- Competence development;
- Communication and interaction;
- Sustainable development;
- Cultural;
- Social and citizenship;
- Entrepreneurial.

[12] An employability skills qualification is available at Certificate II (equivalent to level 1 in England), which covers reading, writing, numeracy, oral communication and learning skills, digital literacy, problem solving, and interacting effectively with others at work. This qualification is for individuals who require further foundation skills development to prepare for technical training pathways or workforce entry (Training.gov.au, 2012).

[13] Certificates in Business are also available at the equivalents of level 1 and level 3 in England, Certificate II and Certificate IV respectively.

Following the 2018 TVET reform, these key competences are no longer included as a distinct element of technical competence. They have been modified, so that they are included in all technical skills requirements and assessment criteria. (Cedefop, 2019). There are currently no level 2 equivalent qualifications on the FiNQF and it is unclear to what extent the key competencies are delivered at this level.

In **France**, TVET comprises technical components along with general ones (such as French, history, geography and civic education, mathematics, a modern foreign language). The general part of the programme includes generic competences which since 2016/17 have comprised the 'common base of knowledge, competences and culture'. The common base of knowledge, competences and culture corresponds to the five following educational areas:

- Languages for thinking and communicating;
- Methods and tools for learning;
- Education for the individual and the citizen;
- Natural systems and technical systems;
- Representations of the world and human activity (Cedefop, 2016, 2018).

The competencies are also included (and certified) in compulsory education, i.e. from age six to 16 (Cedefop, 2018).

In 2015, France's national cross-sector jobs and training committee (Comité interprofessionnel pour l'emploi et la formation, COPANEF) introduced the technical knowledge and skills base certificate (Certificat de connaissances et de compétences professionnelles, CléA) for adults willing to certify their key competences for employability and for access to further learning (Cedefop, 2018).[14]

In **Germany**, there is a strong emphasis on generic skills in both the dual system and full-time technical schools (Vogler-Ludwig et al., 2012; Federal Institute for Vocational Education and Training, n.d.). Although there are widespread references in the anglophone literature to apprentices and trainees learning generic skills, as well as practically oriented competencies, there is very little detail concerning what this entails and it has not been possible to establish whether and to what extent this occurs at the equivalent to level 2 in England.

A strong emphasis is also placed upon the acquisition of generic skills in the **Netherlands** (Vogler-Ludwig et al., 2012). The MBO occupational standards for MBOs –

[14] In 2016, the national literacy agency (Agence nationale de lutte contre l'illettrisme) developed a key competences framework for work situations (54). The framework proposes a list of key competences, which can be used to describe work situations and to design training programmes. (Cedefop, 2018)

including MBO 3 (equivalent to level 2 in England) – include both occupation-specific requirements and general requirements. The general requirements are set by the government and cover the subjects Dutch, arithmetic, career and citizenship education, and – for MBO level 4 courses only (equivalent to level 3 in England) – English. (Eurydice, 20 July 2018). It is reported that work based learning (BBL) is regarded as providing individuals with a more comprehensive set of generic employability skills (such as conflict management skills, entrepreneurship, or team-working) than the classroom-based pathway (BOL) (Vogler-Ludwig et al., 2012; Fazekas and Litjens, 2014).

In **New Zealand**, in 2017, the government launched the Employability Skills Framework, which describes seven skills and competencies: positive attitude, communication, teamwork, self-management, willingness to learn, thinking skills, and resilience. In their recent project designed to assist teachers in technical education to embed employability skills within their teaching practices, Duignan et al. (2018) added three additional categories: innovation, entrepreneurship and cultural competence, which they derived from project team discussions and reflections on the literature reviewed. Duighan et al.'s (2018) research into strategies used by New Zealand's technical teachers to enable or encourage these skills focused on programmes NZQF Levels 3 – 5 (equivalent to levels 3 – 5 in England). This suggests that these employability skills may not be as important in the context of level 2 programmes, where English and maths skills are prioritised.

There is no evidence of generic skills being delivered at levels comparable to level 2 in England in **Norway.** The emphasis is on students developing such skills in the workplace. Interestingly, a key strand of current policy is to make the common core subjects (Norwegian, English, maths, science, social science and physical education) more relevant to students' chosen career paths.

Level 2 content

Summary

- In **Australia** and **New Zealand**, the majority of upper-secondary TVET is equivalent to level 2, although in the latter, trade qualifications are at level 3.
- **Denmark, Germany** and **Norway** offer level 2 equivalent training allied to specific job roles and it is assumed those taking level 3 equivalent training will have level 2 content incorporated into their programmes.
- **France** offers practical training at level 2 (CAP); while the level 3 equivalent BAC Pro integrates level 2 content, it is also possible to get this certified through the BEP.
- In **Finland**, technical qualifications at upper-secondary are level 3 equivalent and it is assumed that any level 2 content is integrated. Similarly, level 4 MBOs in the **Netherlands** (level 3 equivalent) presumably integrate level 2 content as some students begin at this level.

Findings

For the majority of the countries (Finland excepted), content equivalent to level 2 can be found described as such in units or full qualifications. As in England, it is possible to embark on a level 3 qualification, providing entry requirements are met, without necessarily having studied the particular subject at a lower level. Therefore, it would seem that, as in England, level 2 equivalent content is integrated within them.

Training packages in **Australia** include units from different levels according to the specific skills and knowledge needed for individual competencies so that a full level 3 equivalent full qualification may contain lower level units. As noted, the majority of post-16 secondary TVET training is a level 2.

In **Denmark**, level 2 equivalent (DQF level 3) forms part of upper secondary TVET which, with the follow-up apprenticeship, can take the student to DQF level 5 (level 4 equivalent). However, there are stopping off points along the way. So, the level 2 equivalent could be for example, Certificate or journeyman's certificate for technical education and training (e.g. social and health-care helper, industrial assistant) (TVET), or the smaller Basic technical education and training certificate. The level 3 equivalent could

be Certificate or journeyman's certificate for technical education and training (e.g. social and health-care assistant, industrial technician).[15]

The basic programme part 1 (20 weeks) is for students who have just finished compulsory education and provides students with a broad technical knowledge and competences. Basic programme part 2 (20 weeks) is also classroom-based and takes place within the technical education and training programme that the student has chosen. The course finishes with an examination broadly equivalent to level 2 and students then follow the main programme which is at level 3.

The main programme of the Danish TVET is based on the alternating principle, which combines classroom-based and work-based learning, and students must therefore have a training agreement with an approved company which offers training. The main programme typically takes three to three and a half years, but can be shorter or longer for certain programmes. Main programmes are offered at EQF level 3 (one and a half years), at EQF level 4 (three years) and some programmes at EQF level 5 (five years). This is dependent on the occupational role.

Technical qualifications in **Finland** are modular. Each technical qualification unit constitutes a specific occupational area which can be isolated into an independent and assessable component. Assessment criteria determine the grades awarded for units in upper secondary technical qualifications and the standard of an acceptable performance in further and specialist qualifications. While achievement of full qualifications in the upper secondary is deemed to be at level 3 equivalent, it is likely that some individual credits/units may be at level 2, as in any role, some individual competencies (e.g. IT skills) may not need to be at the overall level of the qualification.

Students in **France** transfer to Lycées at age 15 to 16 for three years of upper secondary schooling. In the technical Lycées, pupils will either work towards the level 3 equivalent baccalauréat professionnel (BAC Pro), for which they will need to continue taking classes in some general subjects including French and maths, or the more practical, level 2 equivalent CAP (certificat d'aptitude professionnel). While level 2 equivalent content is integrated within the BAC Pro, students can opt to have this content separately certified through the BEP (Brevet d'enseignement professionnel) two years into their programme which provides evidence of competency in a technical area (e.g. bakery).

Realschule and hauptschule (different streams of technical schools) graduates (and a small number of gymnasium graduates) in **Germany** typically enrol in a technical upper secondary programme at age 15 or 16. Level is determined by the requirements of the

[15] Website http://eng.uvm.dk/upper-secondary-education/vocational-education-and-training-in-denmark Accessed 1/11/2019

occupation the student or apprentice is being trained for, so where that occupation is at level 3 equivalent, in terms of outcomes, any level 2 equivalent content will be integrated within that. Other occupations are at level 2 equivalent. Typically, Realschule students tend to move on to training at the higher level and hauptschule students to lower level and manual training.

In the **Netherlands,** VMBO (the prevocational programme for those assigned to this track at age 12) normally lasts four years from 12 to 16. The first two years are dedicated to general academic subjects; during the last two years of the VMBO students are offered one of the following paths:

- Theoretical learning pathway: Upon graduation, students may proceed to upper secondary technical education or continue with general education.
- Combined learning pathway: The study programme is more prevocationally oriented in comparison to the theoretical learning pathway, however, progression routes upon graduation are similar.
- Prevocational learning pathway – higher level: The programme is preparation for long courses at upper secondary level – MBO levels 3 and 4.
- Prevocational learning pathway- lower level: The programme is a preparation for short courses at upper secondary level – MBO level 2.

While the literature does not make it explicit, it is possible that the higher level VMBO pathways may incorporate some element of level 2 equivalent content. Where the starting point for upper secondary technical education is MBO 4 (level 3 equivalent), presumably level 2 equivalent content will be integrated. As the system uses a competency-based approach, assessment is at outcomes level.

In **New Zealand**, students generally work through the NCEA levels from 1 to 3 in years 11 – 13 (aged 15/16 to 18/19). They may choose to spend part of their time at a Trades Academy to gain credits towards their NCEA certificate as well as credits towards a technical certificate.

The first stage at which TVET is provided in **Norway** is at lower secondary level through elective programme subjects (utdanningsvalg). These enable 8–10th year students (aged 12/13 to 15/16) to try out subjects from the different upper secondary level programmes, including TVET. The typical 2:2 system leads to a level 3 equivalent certificate, so one assumes level 2 content is integrated. Alternatively, a level 2 equivalent qualification can be taken.

Provision for young people not ready for upper secondary qualifications

Summary

In ongoing reforms to technical education in England, the T Level Transition Programme is for students who have the potential to progress onto a two year T Level following a tailored preparatory programme. The countries in this review do not seem to offer a comparable transition year which may be for a number of reasons:

- As noted above, most level 3 programmes are around three years long; this would provide students with more time to reach level 3, so reducing the need for a supportive transition year prior to a two-year programme.
- The countries (with the exception of Finland and Norway) route students to programmes at a level deemed appropriate for them at the beginning of upper secondary (see above) which may not be at level 3. However, opportunities for progression to level 3 do exist as noted in the relevant section below.

Consequently, transition programmes in comparator countries as described below are focussed on supporting young people into mainstream TVET, which may be at a level lower than level 3 equivalence.

The most common requirement for entry to upper secondary TVET programmes is completion of lower secondary schooling, evidenced by some form of leaving certificate or transcript. This is the case in **Australia, Denmark, Finland, Germany** – although minimum requirements are set for maths and Danish in **Denmark**. In **Norway**, participation in lower secondary is the only requirement; no minimum pass levels are set. In **France**, the type of upper secondary school that pupils transfer to – and, consequently, the range of qualifications available to study – is determined by an exam taken at 15 (although around 28% of pupils repeat the final year at lower secondary). In the **Netherlands**, the end of primary schooling sees pupils placed on a track for secondary education; for those on the technical pathway, the level of preparatory education at lower secondary determines the possible level of technical education in upper secondary. **New Zealand** offers flexible, credit-based qualifications that are open to all at upper secondary.

Denmark offers an alternative programme for those not deemed able to complete the upper secondary TVET offer (which has exits equivalent to levels 2 and 3). **Norway** offers alternative programmes for pupils with special educational needs. **Finland, Germany** and the **Netherlands** have programmes that support eventual transition to upper secondary. Supporting people to move into technical education is largely the responsibility of TAFEs in **Australia**, who develop local programmes. **France** and **New**

Zealand do not offer transition programmes but have initiatives in place to support people to achieve qualifications.

Findings

Responsibility for determining entry to TVET programmes ultimately rests with the provider in **Australia**, although different Certificates may specify entry requirements. For Certificates at Levels II and III (level 1 and 2 equivalent), where requirements exist, they often simply require students to have reached a level of study equivalent to the Australian Year 10. Certificates at Level IV (level 3 equivalent) usually require completion of year 11 as a minimum (equivalent to 4 GCSE passes)[16]. Some courses may have prerequisite subjects or work experience requirements.

TAFE institutions, as the main public provider, have had a long commitment and record of providing opportunities for students experiencing disadvantage, although financial pressures have reduced provision of late (Lamb et al., 2018). However, the increased marketisation of the TVET sector has led to cuts to government funding of TVET and a consequent decline in the financial stability of TAFEs and a reduction in provision of access and Certificate I and II courses that can provide the initial skills and confidence needed to enter the workforce or to progress to an industry-recognised qualification (Department of Education and Training Victoria, 2015; Griffin, 2016).

However, some training providers do offer support packages for those not yet ready for intermediate level education and training. For example, in the Workready programme offered by a provider in the Northern Territories, students undertake specific TVET training for one or two days a week, a work placement with a host employer for between one and three days a week and complete a Certificate Level I in Work Preparation (entry level in England). Following the programme, students typically go on to a classroom-based traineeship.

However, there is support available for those who do not go onto education or work. The Engaging Early School Leavers initiative, started in January 2016, forms part of the Youth Employment Strategy and is intended to strengthen the chances of early school leavers finding and keeping a job. Early school leavers who are not on a further education track are supported to look for work and can be required to do so. This includes seeking opportunities such as apprenticeships or traineeships.

[16] https://www.tafesa.edu.au/international/entry-requirements#overseas-qual Accessed 30/10/2019

The Transition to Work service aims to help those aged 15 to 21 who are out of work and not engaged in education with intensive, pre-employment support to improve their work readiness, including apprenticeships, traineeships or education.

The National Work Experience Programme aims to build confidence and real-life work experience in job seekers and prepare them to meet expectations of employers by undertaking volunteer work experience with for-profit, not-for-profit and Government organisations for up to 25 hours per week for a maximum of four weeks per placement.

The Australian Apprenticeships Access Programme provides prevocational training linked to an apprenticeship pathway for vulnerable jobseekers.

Admission to mainstream TVET (the Basic programme initially, see above) in **Denmark** is offered to anyone who has completed compulsory schooling and obtained the pass mark in Danish and Maths in the leaving examination. Young people must also be declared 'study-ready' based on an assessment of their academic, personal and social competences conducted by either the college or the local youth guidance centre. For those not considered ready, there are a number of programmes on offer:

- Combined post-compulsory education is an occupation-oriented, qualifying education programme offered to people aged 15 to 24 who do not possess the necessary technical, social or personal skills to complete a TVET or an upper secondary education. This has a maximum duration of two years and leads to the title of "occupation assistant" within a specified job area within ten occupational themes. While the literature does not provide a level for this, we assume that it is probably equivalent to level 1.
- Basic Vocational Education and Training (egu) is an individualised basic technical education and training programme that is geared towards both employment and continued education. It is an alternating or sandwich-type training programme where practical training is combined with a subject-relevant classroom-based part in an overall programme (one and a half years to three years long) in which the classroom-based part lasts between 20 to 40 weeks. The classroom-based elements are taken from a number of existing education and training programmes. The egu Act describes the target group as people under the age of 30 who live in the municipality and do not receive education, do not have a job and do not have the preconditions for completing another qualifying youth education. The young people in question are typically practically-oriented, often come with a weak educational background, and are not very academically inclined (Danish Ministry of Education, 2018). Again, the programme does not have a level associated with it.
- Youth education for young people with special needs is intended for those with intellectual disabilities or other special needs, 16 to 25 years of age, or up to 34 for

those with special needs, who are unable to complete another upper secondary programme. The Act on Young People with Special Needs (2007) stipulates that local authorities are obliged to offer young people with special needs a three-year youth education programme upon completion of compulsory schooling. The programme is not necessarily technical, but generally combines general, technical and practical elements (Andersen and Helms, 2019).

Students who have successfully completed compulsory education through achieving a basic education certificate in **Finland** are eligible for general and technical upper secondary education and training. Student selection is mainly based on the students' grades on their basic education certificate (end of compulsory education). The selection criteria used by technical institutions may contain work experience and other comparable factors, including entrance and aptitude tests (Koukku and Paronen, 2016).

The preparatory instruction programme has been developed for students not yet ready for upper secondary TVET. The programme lasts from six months to a year and does not have a qualification level attached to it (Ministry of Education and Culture 2019). The aim of this instruction is to improve students' capacities to obtain a place in upper secondary TVET and to get acquainted with a wide range of various fields of education, occupations and jobs. Students can improve their capacities for studying and build the knowledge base needed in the studies. This provision started as an experiment but was made a permanent part of the education system from August 2010 (Koukku and Paronen, 2016).

Technical special education institutions provide facilities and services for students with severe disabilities or chronic illnesses. Instruction is given in small groups and the main emphasis is on practice rather than theory (Ministry of Education and Culture website).

At 15, students in **France** take an examination which determines how their education will continue (unless they repeat the final year of lower secondary, which around 28 per cent of students do) (OECD, 2017). At upper secondary level, most students move on to a lycée. The Lycée is organised in three different streams: Lycée general, Lycée technologique, and Lycée professionnel. The latter is the technical stream and leads to the baccalauréat professionnel (BAC Pro). Alternatively, students can take either a brevet d'enseignement professionnel (BEP) or Certificat d'aptitude professionelle (CAP), both of which can lead to the baccalauréat professionnel or into work.

The CAP is seen as the least challenging option but many students do not pass their final exams, entering the labour market without any formal certification. A flagship scheme designed to prevent young people leaving school prematurely with no qualifications (Tous mobilisés pour vaincre le décrochage scolaire) was launched in 2014 by the Ministry of Education, and initiatives have proliferated to reverse the phenomenon: dedicated local networks, personalised guidance and support, specialised training

structures. As a result of these measures, a quarter of all dropouts have gone back into continuing training (Cedefop, 2018).

In **Germany**, the entry requirement for technical schools is the lower secondary school leaving certificate (grade 9 or 10 depending on the Land with pupils aged 15/16) or the certificate obtained on completion of grade 10 (mittlerer Schulabschluss).[17] While there are no formal entry requirements for the dual system, the proportion of new trainees without at least a school leaving certificate was only 3.1% in 2017.

The 'transition system' is for those who leave school without qualifications, do not fulfil the entrance requirements for full-time technical schools or failed to obtain an apprenticeship position. This comprises a range of training, education and labour market schemes to assist people into education, training or employment:

- The prevocational training year (Berufsvorbereitungsjahr – BVJ) is a one-year course of training, designed to prepare young people for the demands of technical training in which young people can also acquire the secondary school leaving certificate.

- The basic technical training year (Berufsgrundbildungsjahr – BGJ) can be completed either in a year at school (full-time) or jointly between an enterprise and school. Successful completion of the BGJ can be credited as the first year of technical training in the relevant occupational field.

- Introductory training (Einstiegsqualifizierung – EQ) provides young people whose prospects of being placed in TVET are limited due to individual reasons, such as

[17] At the end of grade 9, it is possible in any Land to obtain a first general education qualification, which is called the *Hauptschulabschluss* in most Länder. A leaving certificate is issued after grade 9 if adequate marks (mark 4 or *ausreichend*) or better are received in every subject. In some Länder, the certificate is attained by successfully completing grade 9 and passing a final examination. At lower secondary level schools that go beyond grade 9, a corresponding qualification can be obtained in most Länder if certain marks are achieved. This first leaving certificate in general education is usually used for admission to technical training in the so-called *duales System* (dual system). In addition, it qualifies a pupil, under specific conditions, for admission to certain *Berufsfachschulen* (a certain type of full-time technical school). Moreover, it is a prerequisite for subsequent admission to certain *Fachschulen* (schools for continued technical training) and institutions offering secondary education for adults known as *Zweiter Bildungsweg*. In some Länder, it is possible to obtain a qualifying *Hauptschulabschluss* testifying to an above-average performance. At the end of grade 10, in some Länder, an extended *Hauptschulabschluss* may be acquired which, under certain conditions, allows admission to further *Berufsfachschulen*.
At the end of grade 10, it is possible in any Land to obtain a *Mittlerer Schulabschluss*, which is called *Realschulabschluss* in most Länder. In the majority of Länder, this certificate is issued after successful completion of grade 10 and after passing a final examination. The *Mittlerer Schulabschluss* can be obtained after grade 10 at other types of lower secondary schools as well if certain standards of achievement are met, and also at the *Berufsschule* with the requisite achievement level and average mark. It qualifies a pupil for admission to courses of upper secondary education, e.g. at special *Berufsfachschulen* and at the *Fachoberschule*, and is also used for entering a course of technical training within the *duales System* (dual system).

SEND or poor language skills, with an opportunity to acquire or enhance personal and technical competences and gives companies offering training the chance to get to know these young people. Companies that offer introductory training enter into a contract with the young people concerned. On completion of the work placement, participants receive a certificate issued by the competent body (e.g. chamber of industry and commerce, chamber of skilled crafts). In certain circumstances, up to six months' credit for the work placement can be offset against the qualifying period of a subsequent apprenticeship. It has proved to be a 'door-opener" to apprenticeship for approximately 70% of participants (Hippach-Schneider and Huismann 2019).

In contrast to the fully qualifying firm-based and classroom-based sectors, the various prevocational programmes do not result in occupational credentials – that is, they are not seen as providing full competence for an occupational role. Prevocational programmes usually last one year; some are shorter, some longer (two years). Some include workplace training, but most are entirely classroom-based. Seeking employment directly after leaving school is only rarely an alternative option because in most German states schooling and technical education is compulsory until at least the age of 18. (Solga et al., 2014).

At the end of primary school, headteachers in the **Netherlands** provide all pupils with recommendations about the type of pathway they might wish to pursue in secondary education (aged 12+). This recommendation is made based on a pupil's knowledge and aptitude and their results in primary school tests, taken in Year 6 (age 11 or 12). School boards then decide on the pathway a pupil will follow in lower secondary education on the basis of their primary school assessment results and on their initial work in the first two years of secondary education (aged 12 to 14). Once a student has chosen their pathway, they tend to stay on it but it is possible to move across pathways (O'Donnell and Burgess 2017).

Students on the technical pathway undertake preparatory technical secondary education between the ages of 12 to 16 years (VMBO) to start senior secondary technical education and training. VMBO is available at several levels and which track the student is on in turn informs the level of upper secondary education available to them.

In cases where a pupil is not expected to obtain a lower secondary technical diploma (VMBO), at age 16, they enrol in a practical training programme (known as praktijkonderwijs, or PRO). In 2014, 2.5 per cent of primary school pupils were recommended for enrolment in PRO in secondary education. Practical training programmes provide pupils aged 12 to 18 with practical experience and 'learning through doing', training them to enter work. Depending on the practical training programme they are enrolled in, and whether they have reached the end of compulsory schooling (age 16), students may go straight into employment or may continue with further study; around

40 per cent of PRO students transfer to the MBO 1 route (equivalent to entry level in England).

Students with additional learning needs are, as far as possible, integrated within the mainstream school. Students may follow the curriculum on offer in practical training programmes. Students enrolled in the further education pathway in a special school work towards a school leaving qualification (a HAVO, VWO or VMBO certificate), and receive a certificate detailing the examinations they have completed on leaving education. Students enrolled in the daily activity and labour market activity pathways are generally given testimonials by their school when they leave education. Students are permitted to participate in special school education until the age of 20 (O'Donnell and Burgess 2017).

The **New Zealand** Government has introduced several initiatives aimed at supporting students to achieve NCEA Level 2 (level 2 equivalent). This includes introducing additional learning pathways for students as part of the Youth Guarantee policy as well as those connected to service and trades academies.

The Youth Guarantee scheme is designed to support students to develop specific technical skills. It operates across secondary and tertiary sectors and has as its specific focus the development of NCEA Level 2 qualifications (level 2 equivalent). The five technical pathways of this scheme are: manufacturing and technology; construction and infrastructure; primary industries; social and community services; service industries.

Trades Academies focus on delivering trades and technology programmes to secondary students based on partnerships between schools, post-secondary institutions, industry training organisations, and employers. Students in years 11 to 13 are able to combine study at a Trades Academy with studies towards their NCEA and a nationally transferable tertiary qualification at level 1, 2 or 3 (equivalent to levels 1, 2 and 3 in England).

A Youth Guarantee evaluation found that while the programme did increase the numbers of students attaining NCEA Level 2, it had not had any effect on increasing the proportion of those who progress to study at level 4 (England level 3 but, as noted above, level 3 is split into 3 and 4 in New Zealand, with level 4 only achievable in work) or above (Gordon et al., 2015).

The upper secondary programme in **Norway** takes place from age 16, after the end of compulsory schooling. A pupil in Norway has the right to a place on one of three alternative education programmes that he or she has applied for, chosen from the 12 programmes presently available (three general study programmes and nine technical programmes) providing they meet one of the following requirements:

- Completed Norwegian compulsory education (primary and lower secondary education). It is not necessary to pass all subjects, but to have participated in the compulsory education.
- Completed education equivalent to Norwegian compulsory education.
- Completed all but one year of compulsory education and left lower secondary school due to specific circumstances such as a disability preventing the pupil from taking further part in education at that level.
- Completed 7 years of compulsory education in accordance with the requirements of the old education system.

Students with a disability eligible for special education have the right to be accepted to an upper secondary specific education programme at the request of the pupil, their parents and teacher.

Admission to specific education programmes can be affected by factors such as the applicant's grades and the county's course provision. However, more than 90 percent are admitted to their first-choice institution[18]. If the number of applications exceeds the number of places in the county, pupils will be assigned an educational programme depending on the pupil's grades from lower secondary school. In some counties this rule also applies to the assignment of pupils to specific schools. The achievement points are based on marks from compulsory subjects in lower secondary education.

We could find no reference in the literature or government websites to any form of transition programme in Norway for upper secondary, so it would seem none exists.

[18] Eurydice website accessed 4/11/19 https://eacea.ec.europa.eu/national-policies/eurydice/content/organisation-general-upper-secondary-education-39_en

The relationship between classroom-based study and apprenticeships

Summary

- Apprenticeships are available at the equivalents of level 2 in England in **Australia**, **Denmark**, **France** and the **Netherlands** (where they start at level 1) and **Germany** (where they start at level 2).
- In **Finland**, **Norway** and **New Zealand**, apprenticeships start at the equivalents of level 3 in England.

Findings

Countries where apprenticeships are available at level 2

In **Australia**, apprenticeships (and traineeships)[19] are available at Entry level (Certificate II), Trade level (Certificate III) and Post Trade levels (Certificate IV and Diploma). These levels are equivalent to level 1, level 2 and level 3 in England respectively. No previous qualifications or requirements are necessary, and they can be undertaken on a part-time or full-time basis (Bradley, 2019). As in the case of classroom-based technical courses, most apprenticeships and traineeships are followed at Certificate III level (which is equivalent to level 2 in England), and this level is the apprenticeship benchmark (Australian Apprenticeship Pathways, 2019; University of Melbourne, 19 January 2018).

Danish apprenticeships generally encompass the equivalents of both level 2 and level 3 in England, with students covering the former before progressing to the latter. Students can either complete a level 3 qualification or exit their apprenticeships at level 2 (DNQF 3 / EQF 3) with a qualification at that level and, if they wish, resume their studies to qualify at level 3 (DNQF 3 / EQF 3) within the same programme at a later date.

In **France**, the same qualifications that are available within technical high schools can be achieved through an apprenticeship in a Centre de Formation pour Apprentis (CFA). Apprenticeship gives access to all levels of state recognised technical qualifications, from

[19] In Australia, the term Australian Apprenticeships covers both (1) Apprenticeships – a structured training arrangement of typically 3.5 to 4 years duration that traditionally covers skilled trade areas and results in a portable, industry recognised qualification and (2) Traineeships – which tend to be shorter in term, and typically cover non-trade occupations. Traineeship can take between 9 months and 2 years to complete (Bradley, 2019).

secondary to higher education, by means of successive contracts or via bridges with classroom-based education courses. These includes the CAP and BAC Pro, which are at the equivalents of level 2 and level 3 in England respectively.

As noted above, in the **Netherlands** all TVET qualifications at MBO levels 2-4 (equivalent to levels 1-3 in England) can be obtained in either a classroom-based or an apprenticeship track. While classroom-based track students are largely enrolled in upper secondary TVET programmes at MBO level 4 (equivalent to level 3 in England), Dutch apprentices are predominantly found at levels 2 and 3 (equivalent to levels 1 and 2 in England) (Cedefop, 2016).

In **Germany**, training occupations in the dual apprenticeship system are mapped in the German and European Qualification Frameworks at level 3 and level 4 (equivalent to level 2 and level 3 in England respectively). Most of the training occupations at DQR level 3 (equivalent to level 2 in England) offer a clear progression route to a determined training occupation at DQR level 4 (equivalent to level 3 In England) with a longer duration (Apprenticeship toolbox (2019).

Examples of apprenticeships at level 3 on the DQR (level 2 in England) and level 4 on the DQR (level 3 in England).

DQR level 3 (comparable to level 2 in England): Technical qualification certificate (state-recognised training occupation): Industrial Electrician

Graduates are able to assemble and connect electronic equipment. They can measure and analyse electric systems and assess its safety. They can maintain plants and equipment. They are able to manufacture electronic devices and systems by configuring cables and connecting components. Graduates developed competences to fulfil professional requirements independently within a partially open structured field of learning or field of occupational activity. Technical education and training in the dual system, which leads to this qualification, is carried out in two places of study, in companies and at the Berufsschule (part-time technical school). The aim is to impart technical competence in a structured training course. Successful completion allows immediate professional practice as a qualified specialist/skilled worker. Duration of training: two years.

DQR level 4 (comparable to level 3 in England): Technical qualification certificate (state-recognized training occupation): Electronics Engineer for Automation Technology

Graduates are able to install highly complex computer-controlled industrial plants. They can assemble an automatically working system from single components. They are able to programme, test, put into operation and maintain plants. They develop competences to plan and implement independently tasks assigned within a comprehensive, dynamic field of learning or field of occupational activity. technical education and training in the dual system, which leads to this qualification, is carried out in two places of learning, in companies (three quarters) and at the Berufsschule [part-time technical school] (one quarter). The aim is to impart technical competence in a structured training course. Successful completion allows immediate professional practice as a qualified specialist/skilled worker. Duration of training: three and a half years.

Source: European Commission website - Learning Opportunities and Qualifications in Europe. https://ec.europa.eu/ploteus/en/compare

Countries where level 2 apprenticeships are not available

In **Finland**, all technical qualifications and apprenticeships begin at the equivalent of level 3 in England; while in **Norway,** the equivalent of level 2 in England is only available for candidates who are unable to meet the entry requirements for standard apprenticeships. In **New Zealand**, although level 2 qualifications are widely available via classroom-based

routes, apprenticeships start at the equivalent of level 3 in England. Although many apprenticeships do not have any NCEA level 2 requirements, most training organisations recommend studying NCEA maths and English to at least level 1 or 2 (SchoolLeaver.nz. n.d., CareersNZ, 2019).

Progression from level 2 to level 3

Summary

- In **Denmark**, **Finland, France** and **Germany** there is an emphasis on providing flexible and personalised learning pathways and promoting validation of prior learning technical education at the equivalents of level 2 and level 3 in England.
- In the **Netherlands** and **New Zealand,** recent and current reforms focus on developing smooth transitions and continuous learning pathways between lower secondary and upper secondary education at the equivalents of level 2 and level 3 in England.
- In **Australia**, the National Training Entitlement enables all working age Australians without a Certificate III (which is equivalent to level 2 in England) or higher qualification to access a government subsidised training place. Support is also available for Certificate IV (which is equivalent to level 3 in England), but this is restricted to priority industry qualifications that are intended to reflect the skills needed by employers in particular states and territories.
- In response to low completion rates and poor attainment, **Norway** is currently exploring how classroom-based courses can be adapted to make them more similar to apprenticeships.

Findings

The various approaches used in the eight countries include a focus on flexible and personalised learning pathways in upper secondary technical programmes, smooth transitions between lower secondary and upper secondary technical qualifications at the equivalents to level 2 and level 3 in England and/or subsidised training schemes.

Flexible and personalised learning pathways in upper secondary

In **Denmark**, **France** and **Germany**, there is an emphasis on developing learning pathways within upper secondary technical education that are flexible and allow students to personalise their learning paths.

In **Denmark,** in August 2015, the Danish Ministry of Education began to implement a programme of reforms of Denmark's upper secondary technical education and training programmes. One of the key objectives of these ongoing reforms is to improve completion rates for DQF level 3 and DQF level 4 technical programmes (equivalent to level 2 and level 3 respectively in England) and to ensure that TVET programmes

challenge all students so they may reach their fullest potential (Danish Ministry of Education, 2014). The reforms include:

- Strengthening education differentiation so that lessons can, to a greater extent, be adjusted to fit students' technical qualifications and ways of learning (Danish Ministry of Education, 2014).
- Offering young people education at several technical levels, so that all young people will be challenged and have their potential fully developed, including the use of special talent streams (Danish Ministry of Education, 2014).
- Implementing measures in the basic programme that are designed to enable younger students to make informed choices at the outset of technical programmes regarding the main programme and specialisation opportunities (Apprenticeship Toolbox, 2019).

Another feature of the Danish system is that all students enrolled in technical education and training have their own personal education plan. The education plan aims to align the student's interests and abilities and the studied subjects. The contents of the individual student's basic course and main course – including the practical training part of the programme – are thus defined in the personal education plan. The personal education plan is developed cooperatively by the student and the school and, for students who have concluded a training agreement with a business enterprise, also in cooperation with the practical training place. This is to ensure that the student determines their own course of education (Eurydice, 25 March 2019).

In **Finland**, recently, the number of technical qualifications at FINQF 4 (which is equivalent to level 3 in England) has been reduced from 351 to 164 (43 technical qualifications, 65 further technical qualifications and 56 specialist technical qualifications) to enable students and employers to more easily navigate and interpret qualifications (Eurydice, 2019; National Center on Education and the Economy, 2018) and qualification content has been broadened to support flexible and individual learning paths and promote validation of prior learning (Cedefop, 2015). As noted above, students can complete entire qualifications, parts of them or smaller units, or combine parts of different qualifications based on their needs. They can also have their learning outcomes validated, irrespective of how and where they have acquired the competence, and assessed units of learning outcomes can be accumulated towards a qualification so that students can return at a later date to continue their studies and complete their qualification or update their skills (Finnish Ministry of Education and Culture, 2015, 2018). As long as the individual's competences meet the national qualification requirements, they can be acquired in different learning environments and ways, at different times (Finnish Ministry of Education and Culture, 2015).

A personal competence development plan is drawn up for each student. The plan, which resembles student education plans in Denmark, includes information on various aspects: identification and recognition of prior learning; how and which missing skills are acquired based on the student's current competence and the qualification requirements; how competence demonstrations and other demonstrations of skills are organised; and what guidance and support may be needed. The plan includes information on necessary supportive measures, such as language, mathematics and digital skills training. The plan also includes information on special teaching and studying arrangements that may be required due to learning difficulties, injury or illness. The aim is to offer all the support needed so that each student can complete the qualification (Cedefop representative for Finland, personal communication 2019; Finnish Ministry of Education and Culture, 2018).

In France, government reforms of the CAP (technical aptitude certificate, equivalent to level 2 in England) and technical baccalaureate (Bac Pro, equivalent to level 3 in England) started in September 2019. In the case of the CAP, the pathways leading to a CAP (EQF 3, equivalent to level 2 in England) will be more personalised, with a possible duration of one, two or three years depending on the students' profiles and needs (compared to two currently) (Cedefop, September 2018). Specifically, the CAP will now be done in either:

- One year (for good Troisième students, students that already have a degree or for students that come from technological or vocational Première or Terminale);
- Two years (majority of cases); or
- Three years (special needs students) (Eurydice, March 2019).

An example of progression in France

Thomas - GSM Editor

"My uncle was an electrician; it was working with him that made me want to do my job. Today I am a GSM editor; I install 2G, 3G, 4G networks and we are preparing for 5G. I started with a CAP through an apprenticeship and then progressed to a BEP in the installation of electrical works; I finally finished my studies with a BAC Pro as an electro-technician."

The student pathway into the BAC Pro (EQF 4, equivalent to level 3 in England) is being revised to enable students to make informed choices, progressively specialise and deepen their knowledge:

- At the end of troisième, the student will choose a "family of crafts" that links common job skills in this branch to specialities of baccalauréat.

- In seconde, the student goes through a positioning test (the same as the one in CAP), spends 4 to 6 weeks in a company during the school year and chooses a speciality for the première.
- In première spends 6 to 8 weeks in a company, and starts the his/her final project.
- Finally, in terminale, the student continues in the speciality, spends 8 weeks in a company and choses a module for either higher education or direct transition into the labour market. The students end the academic year by presenting their final piece (which can be an individual or a group project) in front of a jury (Eurydice, March 2019).

In **Germany**, there is an option for Federal States to declare full-time classroom-based technical training programmes as equivalent to existing training occupations. Criteria are, for example, the extent to which they correspond in scope and content and offer sufficient practical work experience. Federal laws have been enacted that now permit final school examinations for such cases to be harmonised with the relevant apprenticeship. In these cases, it is likely that there will be clear progression routes from GQF level 3 (equivalent to level 2 in England) to DQR level 4 (equivalent to level 3 in England) as almost all of the DQR level 3 occupations in the dual system offer a clear progression route to a determined training occupation at GQF level 4 with a longer duration (Apprenticeship Toolbox, 2019).[20] It is difficult to discern the pathways between GQF level 3 and DQR level 4 more generally, however, because only half of the occupations trained in the classroom-based sector have nationwide, federal regulation (Hall and Krekel, 2014; Solga, et al., 2014). A general incentive for students/trainees to progress to higher-level qualifications is that some full-time programmes in technical schools lead to a (restricted) university entrance certificate. As noted above, where full-time technical schools do not offer a technical qualification equivalent to one recognised in the dual system, progression can also be facilitated through attendance at a technical school being credited as the first year of training in the dual system if certain conditions are met (Hensen-Reifgens and Hippach-Schneider, 2014).

Smooth transitions between lower secondary and upper secondary

In the **Netherlands** and **New Zealand** the focus is on initiating learning pathways in lower secondary education that continue through into upper secondary education.

In the **Netherlands**, earlier this year the government confirmed plans to introduce continuous prevocational secondary education (VMBO) - upper secondary technical education (MBO) learning trajectories that take the student from the upper years of VMBO through to the end of MBO. This is intended to give pupils a smoother transition

[20] One out of about every 6 pupils at full-time technical schools are on programmes that are equivalent to training occupations in the dual apprenticeship system.

from VMBO (which lasts four years, from the age of 12 to 16) to MBO (levels 2 to 4, which are equivalent to levels 1 to 3 in England) (Eurydice, 11 October 2019). The government has introduced the following measures to achieve this:

- From their third year, pupils in the basic technical or middle-management technical programmes of VMBO can start taking MBO subjects and thus obtain an MBO level 2 certificate (equivalent to level 1 in England) in three years.
- Starting in the 2016/2017 school year, schools can also offer VMBO pupils in the last two years of a middle-management technical programme (which is comparable to NLQF level 2/EQF level 2 and therefore equivalent to level 1 in England) a phased transfer to an MBO level 3 course (equivalent to level 2 in England).
- Schools may offer pupils in all VMBO learning programmes except the basic technical programme a phased transfer to an MBO level 4 course (equivalent to level 3 in England) (Eurydice, 20 July 2018).

A continuous learning trajectory is set up jointly by VMBO and MBO schools, and takes the student from the upper years of VMBO through to the end of MBO**.** The course can be offered at either a VMBO or MBO school, and provides scope for more in-depth, broader or speedier technical training. Schools are free to design the learning trajectories as they wish. For instance, it may be best for some students to do secondary technical training at their VMBO school. This saves them having to get used to a new school and new teachers. Another option is for young people to start MBO-level training in the upper years of VMBO and gradually transfer to the MBO school, which makes the transition less daunting (Eurydice, 11 October 2019; Eurydice, 20 July 2018).

In their most recent report on the state of education in the Netherlands, the Dutch Inspectorate of Education (2018), reported that more students are progressing to higher levels of technical further education (MBO), with a growing number qualifying at MBO level 3 or 4 (equivalent to level 2 and level 3 in England).[21] Progression from MBO 3 (equivalent to level 2 in England) to programmes at MBO level 4 (middle management and specialist training, equivalent to level 3 in England) is facilitated by a one-year specialist training for students who have completed an MBO level 3 course, which enables them to progress to MBO level 4 (Cedefop, 2016).

In **New Zealand**, the government places a particular emphasis on creating smooth transitions between lower secondary and upper secondary education and students who

[21] In the 2010/2011 academic year, fewer than a third achieved Level 4; by 2015/2016 that proportion had risen above 40 per cent. More than a third of those passing MBO Level 4 go on to study for a technical degree (HBO) Dutch Inspectorate of Education (2018).

are interested in a trade or practical pathway may begin to specialise in technical study while they are at school (CareersNZ, 2019). There is a suite of initiatives that aim to improve the transition from school to training and employment by providing a wider range of learning opportunities, making better use of the education network and creating clear learning pathways (Tertiary Education Commission, 2019). These include the Youth Guarantee Fund, Vocational Pathways and Secondary-Tertiary Programmes (such as Trades Academies).

As noted above, the Youth Guarantee Fund provides fees-free tertiary education for students aged 16 to 19 years who have no or low prior qualification achievement. Students may study towards:

- NCEA level 1 and 2 on the NZQF (equivalent to entry level and level 1 in England) aligned to the Vocational Pathways
- Another qualification at level 1 or 2 on the NZQF, which is intended to enable students to progress to higher-level education or employment, or
- A qualification at level 3 on the NZQF (equivalent to level 2 in England), particularly if the student:
    - has no or low (level 1) prior achievement before enrolling in Youth Guarantee, or
    - has achieved on the NZQF level 1 or 2 qualification(s) through Youth Guarantee and is progressing to a on the NZQF level 3 Youth Guarantee qualification during their two equivalent full-time student (EFTS) Youth Guarantee entitlement (Tertiary Education Commission, 2019)

Vocational Pathways provide structured ways for students to achieve the National Certificate of Educational Achievement (NCEA). The Ministry of Education has worked with industry groups to identify Achievement Standards and Unit Standards that will prepare students for employment or ongoing education in one of six key industries: primary industries, services industries, social and community services, manufacturing and technology, construction and infrastructure and creative industries (Education Review Office, 2016))

Vocational Pathways standards and qualifications are identified on the NZQF for levels 1, 2 and 3 (equivalent to entry level, level 1 and level 2 in England). The pathways are designed to show students how learning and achievement is valued in the workplace and suggest the types of study options and job opportunities available to students. In addition, employers can see students' strengths, abilities, interests and achievements when they look at the Vocational Pathways information (New Zealand Qualifications Authority (n.d.); Education Review Office, 2016).

Students are also provided with a Vocational Pathways Profile, which is a visual graph that shows their achievement against the Vocational Pathways. A students can see their progress and identify where they need to raise their level of achievement. This is intended to help students when planning their courses for the following year. Students can check that their course selections provide the pathways they need to achieve their goals. Students achieve Vocational Pathways Award(s) if they complete one or more Vocational Pathways. Achievement is recorded on the student's Record of Achievement information (New Zealand Qualifications Authority (n, d.); Education Review Office, 2016).

Trades academies (also known as secondary-tertiary programmes (STPs)) are, as mentioned earlier, partnerships between tertiary education organisations (TEOs) and schools that provide a broad range of learning opportunities for senior secondary students (Years 11-13) to ensure they stay engaged in education for longer. The programme must lead to a worthwhile qualification for the students enrolled in the trades academy. This is at a minimum of NCEA Level 2 (equivalent to level 2 in England). Students must also be working toward a trades-related nationally-transferrable tertiary qualification in level 1, 2 or 3 as part of the programme. It is expected that students will have the opportunity to gain a Vocational Pathways Award for NCEA Level 2 (Education Review Office, 2016).[22]

A country expert in New Zealand (personal communication) commented that:

> "A significant majority of students leave school with NCEA Levels 2 or 3, which are likely to support employment, training, or further study. We still have a reasonable proportion of students who leave school with NCEA Level 1 or no qualifications, which is of some concern. Our qualifications system is flexible however, and students are able to complete an NCEA in a range of different institutions such as polytechnics or trades academies. It is pleasing to see that there is also re-engagement in further education from a range of students later in life. There is a growing interest in the technical aspect to the NCEAs, and through the review on which we are currently working, these pathways are being strengthened through stronger links with industry and an entrance award to recognise when students are ready for further study in a technical pathway."

[22] According to education Counts (March 2019), 47 per cent of people who graduated in 2016 with a level 1 or 2 tertiary certificate (equivalent to level 1 and level 2 respectively in England) went onto further study in 2017, with 35 per cent enrolling on higher level programmes and 22 per cent enrolling on programmes at the same level. Unfortunately. The statistics do not differentiate between people graduating with level 1 and level 2 certificates.

Subsidised training schemes

In **Australia** and **Norway**, subsidised training schemes are used to incentivise progression to the equivalents of level 2 and level 3 in England.

In **Australia** progression to AQF 3/ Certificate III (equivalent to level 2 in England) is incentivised through the National Training Entitlement. This entitlement enables all working age Australians without a Certificate III or higher qualification to access a government subsidised training place for their first Certificate III qualification and Certificate I or II qualifications, or foundation skills training such as language, literacy and numeracy training, if these courses form part of the Certificate III qualification. The National Training Entitlement varies across states and territories to suit local needs and circumstances (Department of Employment, Skills, Small and Family Business, November 2019). Differences exist in the eligibility requirements, the courses eligible for an entitlement, course subsidy levels and the quality requirements of providers (Bowman and McKenna, 2016a, 2016b). The Australian states and territories also offer funding for Certificate IV and upwards, however this is not an entitlement and is focussed on priority industry qualifications that are intended to reflect the skills needed by employers in particular states and territories (Bowman and McKenna, 2016b; Courses.co.au, 2019).

An example of progression in Australia

The Victorian Certificate of Applied Learning (VCAL) is a senior secondary certificate of education recognised within the Australian Qualifications Framework (AQF) at levels I to III.

The three qualification levels cater for a range of students with different abilities and interests. They also provide a progression in the development of skills, knowledge and attributes.

Each of the three VCAL award levels has a nominal duration of 1000 hours, which typically is a mix of class time and independent learning. However, the nominal hours (including both scheduled and unscheduled contact hours) may vary when considering the specific needs of each student. Each award includes: Literacy and Numeracy Skills; Industry Specific Skills; Work Related Skills; Personal Development Skills.

Emily included credits to achieve a Certificate II in Building and Construction in Years 10, 11 and 12. In Year 12, Emily commenced a Certificate III in Carpentry in her VCAL. After secondary school, Emily continued her apprenticeship full-time to gain level IV. Emily worked as a qualified carpenter while undertaking a Diploma of Building and Construction (level V). Emily became a Registered Domestic Builder (Unlimited).

In response to low completion rates and poor attainment, **Norway** is currently exploring how classroom-based courses can be adapted to make them more similar to apprenticeships. In Norway, classroom-based routes to technical qualifications are for students not able to secure an apprenticeship. This primarily involves students/candidates enrolling on courses at NQF level 4 (which is equivalent to level 3 in England), which is the same level as Norwegian apprenticeships. However, alternative classroom-based training in Norway has been regarded as second-best to apprenticeships and has had low participation and completion rates and low esteem in the labour market – with those who follow this route often performing poorer in their trade and journeyman's examination than apprentices. Since 2013, this has led the government to fund pilot projects designed to make alternative training more similar to apprenticeship-based learning by having a substantial amount of the training take place in the work environment of a company rather than workshops at special training centres (`praktikcentre'), most of which are run by upper secondary schools (Aspoy and Nyen,2017).

Recent research (Aspoy and Nyen, 2017) shows that the students in the pilot projects experience many of the learning and motivational benefits offered by workplace learning in general, and apprenticeships in particular. In certain circumstances, such schemes can improve the chances of completing TVET for young people without an apprenticeship. However, such training schemes also generate important dilemmas. In particular, there is a risk that full-scale implementation of a system of alternative workplace-based training could reduce the number of new apprenticeships, potentially undermining the apprenticeship model on which Norwegian TVET is based.

As noted above, alongside these routes is the 'training candidate scheme', which is designed for those who are unable to meet the requirements for the trade or journeyman's certificate, which is at the equivalent to level 3 in England. The scheme gives students the possibility of achieving a specially adapted qualification at the equivalent of level 2 in England. The training candidate signs a training contract with a training enterprise, and has to pass a competence exam (kompetanseprøve) at the end of training. While apprentices must fulfil all the objectives set in the curriculum, a training candidate receives adapted training targeted towards a limited number of the objectives in the curriculum. A training candidate therefore has a less comprehensive exam that leads to a technical training certificate (kompetansebevis) at EQF level 3 (equivalent to level 2 in England) when completed. A training candidate may convert the training contract to an ordinary apprenticeship contract while in training, should the candidate aim towards trade or journeyman's certificate. Training contracts may also be an option for TVET students who struggle to get ordinary apprenticeship contracts (Cedefop RefNet, 2014a).

Level 2 as a direct route to employment

Summary

- With the exception of **Finland**, the countries included in the review have exit points linked to specific/recognised occupations following the achievement of technical qualifications at equivalents of level 2 in England. In Finland the first exit point for technical qualifications is at the equivalent of level 3 in England.
- In **Australia,** qualifications equivalent to level 2 in England are the basic entry requirement for a majority of occupations and many students enter employment at that point, whereas in Norway and New Zealand most occupations require the equivalents of level 3 qualifications.
- In **Norway**, a specially adapted lower qualification equivalent to level 2 in England is available for students who, for various reasons, struggle to meet the requirements of the standard qualification. In **New Zealand**, the equivalent to level 2 in England is viewed as a basic requirement in a job applicant, apprentice or trainee.
- In **Denmark, France, Germany** and the **Netherlands**, recognised occupations are available at the equivalents of both level 2 and level 3 in England.

Findings

In Norway and New Zealand, recognised occupations require qualifications at the equivalents of level 3 in England. In **Norway**, exit points of standard classroom-based programmes (and apprenticeships) are at the equivalent of level 3 in England, with candidates being awarded a trade certificate (fagbrev) for industrial and service trades or a journeyman's certificate (Svennebrev)) for traditional crafts. Students who, for various reasons, struggle to meet the requirements for the trade or journeyman's certificate are provided with the possibility of achieving a specially adapted qualification of a lower qualification than a trade or journeyman's certificate via the 'training candidate scheme'. This involves candidates taking a less comprehensive exam that leads to a technical training certificate (kompetansebevis) at EQF level 3 (equivalent to level 2 in England) when completed (Cedefop RefNet, 2014a).[23]

[23] However, as noted above, training candidates may convert their training contract to an ordinary apprenticeship contract while in training, should the candidate aim towards trade or journeyman's

In **New Zealand**, many employers see NCEA level 2 (equivalent to level 2 in England) as a basic requirement in a job applicant, apprentice or trainee. A recent government publication provided the following as examples of jobs for people with level 1 to 2 qualifications (i.e. the equivalent of level 2 or below in England): beekeeper, farm worker, nursery worker, contact centre worker, retail sales assistant, nanny, nursing support worker, painter, tiler and welder (CareersNZ, 2019). NZQF level 3 and level 4 (equivalent to level 3 in England) are pivotal points on New Zealand's qualifications framework. This is because the school-leaving qualifications used for entry to tertiary education as well as technical qualifications are held at level 3, while level 4 holds the New Zealand trade qualifications that recognise the knowledge, skills and attributes required to be a registered tradesperson (New Zealand Qualifications Authority (NZQA) and Quality and Qualifications Ireland (QQI), 2019).

In contrast to Norway and New Zealand, in **Australia**, the equivalent to level 2 in England (Certificate III) is the basic entry requirement for a majority of occupations and many students enter employment at that point (Bowman and McKenna, 2016a, 2016c). Qualifications at this level are often more highly regarded and offer clearer pathways into employment than those that equate with level 3 qualifications in England (Certificate IV) (University of Melbourne, 19 January 2018). It should be noted, however, that the alignment of Certificate III qualifications with job roles varies between and within industry sectors. In some cases, a certificate III is a basic entry-level qualification, whereas it is a skilled worker in other cases (Moodle et al., 2015).

In **Denmark**, **France**, **Germany** and the **Netherlands,** recognised occupations are available at the equivalents of both level 2 and level 3 in England. Most TVET programmes in **Denmark** include one or two steps (trin) and specialisations, each corresponding to a specific position in the labour market (Andersen and Kruse, 2016). Specialisations divide the main programmes into branches, each providing more specific competences targeted at a particular area of the technical field. Due to the subdivision into steps, students can suspend/stop their training at certain predefined stages and enter the labour market. Students are also allowed to resume the TVET programme at a later date, without prolonging the overall duration of education (Cedefop, 2014a; Independent Panel on Technical Education, April 2016; KOF Swiss Economic Institute, May 2017).

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certificate. Training contracts may also be an option for TVET students who struggle to get ordinary apprenticeship contracts (Cedefop RefNet, 2014)

An example of how steps are used in Denmark

One option in the main program is “veterinary nurse”, which contains the two specialisations “veterinary nurse, small animals” and “veterinary nurse, horses”. These specialisations/qualifications are equivalent to level 3 in England (DNQF level 4 /EQF level 4) and both take three years and two months to complete. However, after one year and 10 months, students reach the step “veterinary nursing aide”, which is equivalent to level 2 in England (DNQF level 3 /EQF level 3) and qualifies them for a corresponding position in the labour market. Such a qualification is awarded after having successfully completed a step-test, typically conducted by the (technical) school and an external examiner. Students completing this qualification will be able to assume a position as a veterinary nursing aide within the labour market, but will also be able to return at a later date and resume their studies to become a qualified veterinary nurse (Andersen and Kruse, 2016; KOF Swiss Economic Institute, May 2017).

In **France**, the CAP at EQF level 3 (equivalent to level 2 in England) prepares students for a definite career path, such as hairdresser, baker, or plumber. The BEP, as previously noted, is also a level 2 equivalent qualification, the exams for which can be sat part-way through a BAC Pro course. Although not designed as entry to employment at level 2 and therefore not matched to job roles at that level, the exam does assess professional competencies and, if passed, can at least provide some certification of skills for those who do not continue to the BAC Pro (or who fail to achieve it).

In **Germany**, students who enrol in full-time technical schools within the upper secondary level work towards technical qualifications for skilled work, in sectors that are not craft or industry-based. These qualifications are at level 3 on the DQR (level 2 in England) and level 4 on the DQR (level 3 in England). Students can choose to specialise in a variety of industry areas, from business occupations to trade and technical occupations. Exit points at the equivalent of level 2 in England are determined by recognised occupations. In many cases qualifications at this level offer a progression route to a determined training occupation at the equivalent of level 3 in England (DQR level 4) with a longer duration (Centre of International Education Benchmarking, 2019; Solga et al., 2014).

In the **Netherlands**, students can acquire technical qualifications for a recognised occupation at the equivalents of level 1, level 2 and level 3 in England. As noted previously, these levels are designated basic technical training, professional training and middle management training respectively.

- Basic technical training at MBO level 2 (EQF level 2), which is equivalent to level 1 in England, involves students enrolling on one or two-year courses in order to train for practical occupations such as hairdresser or mechanic.

- ‘Professional training’ at MBO level 3 (EQF level 3), which is equivalent to level 2 in England, involves students enrolling on two to three-year courses in occupational fields such as a nursing assistant or head mechanic.

In addition to the four training levels, MBO schools also offer one-year specialist training for students who have completed an MBO 3 course (equivalent to level 2 in England).

Finally, in **Finland,** the first exit point for technical qualifications is the equivalent of level 3 in England (FINQF 4 /EQF 4). There do not appear to be pre-level 3 exit points linked to specific / recognised occupations (Finnish National Agency for Education, 2018).

Exiting before completion

Summary

- In **Australia, Denmark, Finland**, the **Netherlands, New Zealand** and **Norway**, programmes are modularised allowing for records of partial achievement and the subsequent completion of incomplete qualification.
- In **France**, courses are not modularised although there are opportunities for retakes and the BEP can certify partial achievement of the BAC Pro. However, school leavers entering the labour market without any formal qualifications is seen as a problem.
- Modularisation is also not part of the **German** system although the success rate in the dual system was 99.4% in 2016 after retakes.

Findings

While different states and territories in **Australia** have different systems for Higher School Certificates (which can provide entry to higher education), it generally seems to be the case that accredited TVET courses, or those that form part of a training package, can contribute credits towards the certificates. For those leaving school without completing the Certificate, a Record of School Achievement provides grades and credit records for all courses completed as well as the student's record of attendance. Credits can then be accumulated to achieve the full Certificate over time. For example, the Western Australian government website states in respect of the WACE (Western Australia Certificate of Education) that "there is no specified time limit for the completion of a WACE. Individuals may accumulate their results in WACE units, endorsed programs and TVET credit transfer for WACE achievement over a life time."[24]

Where students have completed units counting towards technical certificates as part of their upper secondary studies, these can be supplemented to achieve the full qualification subsequently through the recognition of prior learning process. A statement of attainment is issued when a student has successfully completed a number of accredited units of study which do not amount to a full qualification. This statement should meet the requirements set out in the AQF Qualifications Issuance Policy (2013) and any applicable standards for the sector.

[24] Government of Western Australia website; accessed 8/11/2019 https://senior-secondary.scsa.wa.edu.au/certification/wace-after-year-12

Technical upper secondary education and training in **Denmark** typically starts with one of 12 classroom-based foundation courses. These are divided into two basic courses – one general and one more oriented towards the occupational area of interest - which themselves do not provide students with qualifications to enter the labour market. This requires them to enter the main programme which provides the specialist occupational training. A student dropping out of either of the basic programmes can rejoin at any time as an adult, though may receive exemption from one or both basic programmes providing they have at least two years of relevant work experience (Ministry of Children and Education).[25]

Acceptance onto the main programme requires a training contract with an enterprise although it is sometimes possible for the training agreement to be with the college where practical training is also provided. The only requirement is that at the end of each training year, they have to keep searching for a firm-based training place, and if they can find one, they can move from classroom-based into enterprise-based training (Solga et al.,2014). When no suitable placements are available in the student's preferred programme, they are offered admission to another associated main programme where placements are available (Andersen and Helms, 2019).

The steps (trin) allow students to leave college without completing one of the main programmes in its entirety while still achieving a partial qualification, providing access to lower level roles in the labour market. Students have the right to resume their training at a later date in order to acquire additional qualifications corresponding to the relevant main programme (Andersen and Helms, 2019).

The **Finnish** National Board of Education reformed all 52 technical qualifications in 2015. The fundamental goal of this reform was to strengthen the learning-outcomes approach of technical qualification requirements and the modular structure of qualifications. This supports building flexible and individual learning paths and promotes validation of prior learning (Cedefop, 2016). All qualifications are composed of units of learning outcomes (competence points). All classroom-based TVET includes at least 30 competence points of on the job learning. Technical qualifications consist of technical units and common units. Technical units are either compulsory or optional. Students can complete entire qualifications, parts of them or smaller units, or combine parts of different qualifications based on their needs. Competence requirements are the same in all learning environments and in qualifications taken in workplaces. Qualifications are the same for young people and adults. Technical qualifications are independent of the way the technical skills have been acquired. As long as the individual's competences meet the national qualification requirements, they can be acquired in different learning

[25] Website http://eng.uvm.dk/upper-secondary-education/vocational-education-and-training-in-denmark Accessed 1/11/2019

environments and ways, at different times. Students demonstrate their skills in competence demonstrations at practical work. Modules in the upper secondary TVET qualifications also appear in further technical qualifications, allowing for a great degree of flexibility (Cedefop, 2016). Assessed units of learning outcomes can be accumulated towards a number of different qualifications.

In **Finland**, students can receive certificates for completed qualification units on request, even where they have not completed the full qualification (Finnish National Agency for Education, 2018). Individuals can also have their learning outcomes validated, irrespective of how and where they have acquired the competence, so they can be assessed on the same competencies either in the classroom-based route or through acquiring competencies in work[26]. Since August 2015, the technical upper secondary qualifications consist of 180 credits. One year of full-time study corresponds to 60 credits. Students can return later to institutions to continue their studies and complete their qualifications or update their skills and achieve the required number of credits through the work-based route.

A new funding model was introduced in 2018 to encourage education providers to adopt measures to reduce discontinuation of studies and recognise previously acquired skills more efficiently (Finnish National Agency for Education, 2018).

Courses in **France** are not modularised. Students who fail the baccalauréat examination (whether general or technical) are issued the certificat de fin d'études secondaires. The overall success rate (general, technological, and professional) was 90.6 per cent for those who were entered in 2015 (OECD, 2017). Some students will have achieved the BEP which certifies the acquisition of professional skills. CAP certification remains selective since many students do not pass their final exams and so enter the labour market without any formal certification (Powell et al., 2012). In response, a flagship scheme designed to prevent young people leaving school prematurely with no qualifications (Tous mobilisés pour vaincre le décrochage scolaire) was launched in 2014 by the Ministry of Education, and initiatives have proliferated to reverse the phenomenon: dedicated local networks, personalised guidance and support, specialised training structures. As a result of these measures, a quarter of all dropouts have gone back into continuing training (Cedefop, 2018). Moreover, should students decide to retake the CAP, grades achieved in different assessments can be retained for up to five years.[27] This enables them to retake the CAP, either in the same institution or through another route (for example, as an apprentice when previously they took it through the classroom-

[26] Ministry of Education and Culture website https://minedu.fi/en/vocational-education-and-training Accessed 1/11/2019
[27] Ministry of Education website https://www.education.gouv.fr/cid2573/la-voie-professionnelle-au-lycee.html Accessed 2/11/2019

based route). In addition, young people are not restricted by funding or other means from taking a CAP in another technical area.[28]

In **Germany**, modular training is not part of the system (UKCES, 2012). Students participate in training for the appointed period of time and attain their technical certificate by passing final examinations. These include both practical and theoretical parts. Upon passing the final examination, apprentices receive a chamber certificate (or a journeyman certificate in the case of a craft trades occupation) to document that training has been successfully completed. In 2016, the success rate in the dual system was 92.6%, and after retaking the exam by those who first missed, 99.4% (Hippach-Schneider and Huismann, 2019). We have been unable to locate pass rates for full-time technical schools in the Anglophone literature to date. Concerns about early leavers or those failing final examinations do not feature in the anglophone literature.

Compulsory education in the **Netherlands** ends at age 16 but, since 2007, all young people up to and including the age of 18 have been required to participate in education until they obtain at least a 'basic qualification' for entry into employment (level 1 equivalent). If they are in work, they are required to attend school at least one day a week until this is achieved.

Depending on the specific MBO route on which they are enrolled, students take examinations at the end of Year 11, 12, 13 and / or 14 (ages 17 to 20). Examinations can be retaken and achievement is often a requirement for moving on to the next level. During MBO training, participants are awarded leaving certificates for the unit examinations they have passed. After they have passed all tests for the course and achieved the accompanying certificates, the certificates are replaced by a diploma. This gives technical schools the opportunity to organise educational processes in a modular way (O'Donnell and Burgess, 2017).

In circumstances where a student in upper secondary education is at risk of dropping out of school without achieving a 'basic qualification', schools are able to work with other educational institutions (including another school or technical training and adult college) to create a tailored programme for him / her (O'Donnell and Burgess, 2017).

One of the main features of the NCEAs (the upper secondary technical qualifications) in **New Zealand** is that they are very flexible. Although most Year 11 students start at level 1, and progress to level 2 in Year 12, and level 3 in Year 13, schools may allow students to study a mix of standards at different levels, depending on a student's ability and goals.

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[28] ONiSEP http://www.onisep.fr/Choisir-mes-etudes/Au-lycee-au-CFA/Au-lycee-professionnel-et-au-CFA/Le-CAP-certificat-d-aptitude-professionnelle/Le-CAP-etudes-programme Accessed 2/11/2019

To gain NCEA at each of the three levels, students need to achieve a specified number of credits. The flexible approach allows credits for the NCEA to also come from other technical qualifications which are often taken through spending one or two days a week in a tertiary organisation. Credits do not expire so that students can keep earning credits while at school and afterwards through more study or by learning some new skills at work. Students will have a record of credits and grades even where these are not sufficient for a full NCEA.

As mentioned above, the Youth Guarantee provides 16 to 19-year olds with more options and choices to gain a New Zealand Qualifications Framework Level 1 to 3 qualification (including NCEA) and go on to further education and training.

- Vocational Pathways, as previously noted, provide new ways to achieve NCEA Level 2. The pathways show students how learning and achievement will be valued in the workplace. They also suggest the types of study options and job opportunities available to students. The Vocational Pathways are a tool that provide a clear framework for technical options, linking education decisions and future employment aspirations to industry.

Building credits in New Zealand

Students may choose to spend part of their time at a Trades Academy to gain credits towards their NCEA certificate and towards recognised technical qualifications. An example offer from the Waikato Trades Academy (WTA) proposes:

- Years 11 or 12 (age 15 to 17): Commit to spending a whole school year coming to Wintec one day a week as part of your regular school programme and study Construction & Infrastructure gaining credits towards NCEA Level 2.
- Years 11 and 12: Come back for a second year to narrow down your learning to a particular field - Building & Construction, Architectural Design or Electrical Engineering, gaining credits towards NCEA Level 3.

After completing the lower secondary level, pupils in **Norway** have a formal right to embark on upper secondary education. This right is valid for five years. About 60 per cent of TVET students complete their upper secondary training successfully within five years (Norwegian Directorate for Education and Training, 2014).

For most TVET programmes, the apprenticeship training starts at the third year (Vg3) and the duration is usually two years. The transition from the second year (Vg2) at school to the third year (Vg3) as an apprentice is especially critical as this is when a high percentage of pupils drop out of the programme they are following. In 2011, less than half

of the pupils continued on a TVET pathway after completing the second year. 22 per cent of the TVET pupils switched to a third year that would qualify them for higher education (although for 2013, the pass rate of this option was only 53 per cent). As of October 2012, another 24 per cent were not receiving education or training. The short supply of apprenticeship placements is the major obstacle to completion. About one out of four who has not completed and passed has taken all of the years of upper secondary education and training, but lacks one or more subjects in order to get a diploma or a trade and journeyman's certificate (Norwegian Directorate for Education and Training, 2014).

It is possible to receive a document of partial competence either because some elements of the full qualification have been failed or, in some cases, students have opted for partial completion at the outset. Full technical competence can be achieved at a later date by completing the missing elements.[29]

[29] https://www.vilbli.no/en/en/no/vg1-vg2-and-vg3/a/029040 Accessed 5/11/2019

The relationship between upper secondary technical qualifications and those for adults

Summary

- Qualifications and apprenticeships in **Australia** are open to all ages.
- In **Denmark**, adults can access the same training but may be exempt from some or all of the basic programme. Similarly in **Norway** adults who have not completed upper secondary are entitled to do so, including through an experience-based certification scheme. More than half of trade and journeyman's certificates are awarded to people over 23.
- The outcomes-based learning modules that comprise upper secondary TVET in **Finland** can also be accessed by adults and assessed as part of an apprenticeship or as an assessment of competence.
- In **France**, the CAP, BEP and BAC Pro can be accessed through an apprenticeship route up to the age of 25; after that, CVET for adults is available.
- Although the dual system is in theory open to adults in **Germany**, in practice the number of apprentices over the age of 23 is very low. Due to the emphasis on initial TVET, occupational mobility in adulthood is very low.
- In the **Netherlands**, the dual TVET (BBL pathway) can function as CVET for adults; other adult provision is market-driven and fragmented.
- In **New Zealand**, NCEAs are confined to upper secondary although, where students have gained credits towards technically-specific awards, these are the same as those taken by adults.

Findings

Technical qualifications in **Australia** can be taken at any age. Australian Apprenticeships covers all apprenticeships and traineeships which can be full-time, part-time or classroom-based. Technical education and training play a significant role as a pathway to employment for young people and in skilling and reskilling for all age groups. For example, TVET has a definite role to play in reskilling workers in the declining manufacturing sector (Atkinson and Stanwick, 2016). An Australian Apprentice can be a student or school-leaver, a person re-entering the workforce or an adult worker simply wishing to change careers. They are available in a variety of qualification levels in more than 500 occupations including traditional trades and a diverse range of emerging

careers in most sectors of business and industry. Apprentices can study for all certificate levels up to Advanced Diploma. Off-the-job training is provided by Registered Training Organisations (RTOs) with the State or Territory Training Authority. The same qualifications can also be taken outside of an apprenticeship, full or part time (NCVER 2016a, 2016b).

TVET for adults (EUV) in **Denmark** takes as its starting point the education and experience that the adult already possesses. Those with at least two years of relevant work experience can go onto the main programme without following either of the classroom-based basic programmes; those with less than this level of experience may undertake the second basic programme before entering the main programme. In addition, adult technical training (AMU) programmes provide participants with skills and competences applicable in the labour market and primarily directed towards specific sectors and job functions. The programmes may either deepen the participant's existing knowledge in a particular field or broaden it into related fields (Andersen and Helms, 2019).

In **Finland**, technical qualifications are outcome-based and can be completed within upper secondary TVET, as apprenticeship training or as competence-based qualifications. In Finland, most apprentices are adults. In competence-based qualifications, the main assessment method is to demonstrate the required skills through competence tests, independent of how the technical skills have been acquired. Competence-based qualifications are usually completed by adults (Koukku and Paronen, 2016).

The main qualifications available to young people in **France** (CAP, BEP, BAC Pro) can be taken through the apprenticeship route up to the age of 25. After that, a range of CVET opportunities are available to adults, although the system is criticised as being fragmented and complex (OECD, 2017).

The percentage of apprentices in **Germany** who are older than 23 years is very low (9.7 per cent in 2014, with only 0.2 per cent older than 40 years). Generally, adults do not participate in the dual system or technical schools, instead they might participate in short-term further training programs, which are often also firm-based and build on the occupations for which they were initially trained, leading to low levels of occupational mobility in Germany.

From an economy-wide perspective, occupational mobility can be important for two reasons: a growth in demand for skills in some occupations and a decline in others, perhaps due to technological or other changes making some roles obsolete; or geographical considerations where particular locations experience inflows and outflows in occupational requirements (for example, such as the building and servicing of Hinckley Point leading to local skills demands). Such demands can be met by the retraining of

existing workforces, focusing initial training on areas of high demand, by the use of skilled migrant labour, or a combination of all three.

According to the Federal Institute for Vocational Education and Training (2018):

> "The field of CVET in Germany is characterised by a pluralism of providers, a largely market character, and a comparatively minimal degree of regulation. CVET is divided into three parts – regulated continuing education, company-based training and individual continuing training. Only a small part of provision leads to a formal technical qualification".

Solga et al. (2014) note that there are few opportunities to train in new occupations after the age of 25 and argue that the lack of opportunities to train for a new occupation in adulthood is due to the emphasis on initial TVET through the dual system. This has led the German government to focus on attracting skilled migrants to meet skills shortages. An immigration law in 2018 focused on attracting skilled workers from outside the EU in an attempt to remedy a chronic shortage that business leaders have argued has stifled parts of the economy. The Fachkräftezuwanderungsgesetz – or skilled labour immigration law – makes it easier for employers to recruit from outside the European Union, where there is clear evidence that there are not enough German and EU workers to fill demand. [30]

There is no institutional framework for continuing technical education and training (CVET) in the **Netherlands**. Provision is market-driven with many suppliers. However, dual TVET (the BBL pathway) can also function as CVET for adults. In addition, MBO training is available part-time and can be taken by those in work (Cedefop, 2016; Fazekas, M. and I. Litjens, 2014). An agreement between the MBO sector and the government makes continuing TVET more flexible for adults. Under the agreement, MBO provision will be better adjusted to adults' needs in terms of time, place and forms of learning (European Commission (2018).

NCEAs in **New Zealand** are upper secondary qualifications and not open to adults. However, students can gain credits during their studies that count both towards the NCEA qualifications and technical qualifications that are taken by adults.

In **Norway**, in practice only a minority follow the standard route and acquire a trade certificate within four years. The average age upon completion of a technical programme in Norway is 28 years (Tønder and Aspøy, 2017)

People over 25 are entitled to upper secondary education or training adapted to their needs and personal circumstances. Adults also have a right to have their prior learning

[30] https://www.germany-visa.org/germanys-new-immigration-laws-open-door-for-skilled-labor/

assessed towards national curricula, which may result in exemption from parts of training. The experience-based trade certification scheme enables adults to sit a trade or journeyman’s examination upon proof of sufficient relevant practice. The candidate must demonstrate comprehensive experience in the trade or craft, normally a minimum of five years. More than half of trade and journeyman’s certificates are awarded to people over 23.

Conclusions

The premise of this research was to compare England's post-16 level 2 (with options drawn from a potential list of over 4,000 qualifications) to that in other countries. Our examination of the upper secondary classroom-based programmes in eight countries demonstrated that level 2 equivalent qualifications are also a significant part of the offer in all of these countries, with the exception of Finland. Other than in Australia, statistics on the relative proportion of students achieving at different levels at the end of upper secondary are not collected. This may be in part because the situation in most countries regarding completion of initial TVET is relatively fluid with entitlement to upper secondary TVET extending into adulthood; students moving into apprenticeship training in order to complete their qualification, possibly after a break; and/or opportunities to complete qualifications in work through building on credits achieved in classroom-based training. Both our review of the literature and subsequent communications with country experts suggest that the number of students achieving at level 2 is not generally seen as problematic, although there are some concerns about employability where achievement is below the equivalent of level 2 (with the exception of France where there are concerns about some level 2 courses).

Where countries have a strong apprenticeship system, qualifications at the equivalent of level 2 are not generally seen as problematic as they relate to specific entry-level jobs (although there may be concerns about progression routes). Similarly, classroom-based qualifications at the equivalent of level 2 are generally linked to occupations at that level.

In the majority of Northern European countries (Denmark, Norway, Germany and the Netherlands), apprenticeship remains the prevailing model for initial TVET, although in France and the Netherlands, the same qualifications are available either through technical schools or apprenticeships. In Germany, the apprenticeship or technical school route is determined by sector, with occupations relating to health and social care and public service largely catered for outside of apprenticeships through classroom-based study. Attaching qualifications to precise occupational roles in apprenticeships has the benefit of ensuring learning is matched to the needs of the role and employers can easily understand what a holder of the qualification knows and can do. However, there are concerns about the extent to which early specialism develops the kind of flexibility and transferable skills needed for fast-changing, knowledge-based economies. Such concerns have begun to appear in the literature relating to Germany. In both Germany and Norway, there are additional concerns about the extent to which apprenticeship opportunities are available for those who want them along with, in Germany, apprenticeship vacancies for which no suitable applicants have been found.

In France and New Zealand, countries without such a strong apprenticeship tradition, concerns have been raised about the extent to which qualifications at level 2 equivalence or below enable young people to enter the jobs market. In France, where qualifications

are not modularised and the same qualifications are available through classroom-based routes or apprenticeships, failure rates are comparatively high and, especially for those with level 2 equivalent qualifications, unemployment levels suggest a mismatch between the qualifications young people are achieving and labour market opportunities. These concerns have led to a number of initiatives designed to encourage young people to continue or resume learning. By contrast, in Australia qualifications at this level are often regarded as offering clearer pathways into employment than those at level 3 equivalence. In Australia, the only country which collects and publishes data on this, most classroom-based TVET is at level 2 equivalent or lower.

In Australia, Finland, the Netherlands and New Zealand, qualifications are modularised and allow for some degree of individual flexibility in the design of learning programmes. The use of modules that can appear in more than one occupational qualification also supports transferability and allows for adding credit to achieve full qualifications, for instance, when moving from school to work or when changing careers. In Australia and New Zealand, the school leaving certificates at upper secondary level are awarded predominantly on the basis of the number and level of credits achieved, meaning programmes can lack coherence and make it difficult for employers to have confidence that young people have developed the right knowledge and skills to meet their needs. 'Training Packages' in Australia 'Vocational Pathways' in New Zealand and 'Occupational Profiles' in the Netherlands, mandated by industry, are intended to improve coherence.

All of the countries in this study have made recent changes to their TVET system – or are in the process of doing so – to address perceived problems. These can be grouped into themes:

- The desire to bring more coherence to the qualification through the grouping of qualifications into broad occupational areas to support breadth and transferability in Denmark, France and Norway. This echoes the approach to T Levels in England through offering broader initial training with increased specialisation as the programme continues.

- A further issue for Norway is the problem of students being unable to complete their programme by moving from the two-year classroom-based provision to the apprenticeship stage of the programme. As a consequence, there is an ongoing exploration of how classroom-based alternatives can be made more similar to apprenticeships in order to improve participation and completion rates, raise levels of attainment and enhance the standing of these courses amongst employers in Norway. As these changes are introduced, there may be lessons that will be of interest in England, where T Levels provide an alternative to apprenticeships in the same occupational area. Alongside this, earlier specialisation in the classroom-based foundation years in Norway are being

introduced to improve links with the labour market. Similar concerns about the relationship between classroom-based learning and work-based learning in Finland have led to a reorientation towards transferable competencies which can be achieved through classroom-based or apprenticeship provision or assessed as competence acquired through work to support transfer and progression.

- Concerns about difficulties in filling some apprenticeship vacancies and how well current programmes support developing skills needs have led to campaigns in Germany to promote TVET, along with an ongoing review of curriculum and competencies to ensure the sustainability of the system.

While all of the countries in this review continue to reinvent their TVET programmes to make them fitter for current labour requirements and to encourage take-up and completion, all (except Finland) continue to envisage a role for level 2 equivalent qualifications to meet the requirements of job roles at that level and to meet the needs of a significant proportion of young people who would find it more difficult to begin training immediately at level 3.

No country in this review offers transition support in preparation for level 3 equivalent programmes as will be introduced in England. Students not deemed capable of immediately embarking on level 3 study or training (in most countries through their level of achievement at lower secondary) will be routed towards qualifications at lower levels. For the most part the level 2 equivalent routes are sizeable programmes viewed as conferring entry to employment in their own right, although progression routes do exist. Level 3 programmes leading to occupational competence in all of the countries in this report are of longer duration than the two-year T Level programme, typically three years or more. The content of the first year of study in which all students participate in many countries (for example, vg1 in Norway or the Basic Programme in Denmark) may, therefore, offer lessons for the transition programme to T Levels in England.

A further issue is the extent to which classroom-based TVET can lead to occupational competence. For T Levels, this issue has led to the concept of ‘threshold competence’, which acknowledges that there may remain a gap between the level of competence achievable through a classroom-based route compared with the work-based route, even where they are based on the same standards. The countries in this study have dealt with this issue in different ways. In Germany, this has led to a clear delineation between occupations deemed suitable for classroom-based training and those for which an apprenticeship is the only route to the qualification. Norway and Denmark mandate a period of apprenticeship training following initial classroom-based study, while other countries have used modularised approaches that allow students to achieve credits towards qualifications while in school or college and to add additional credits once in work to achieve full qualifications. Moreover, most of the countries in this study extend the period in which students can gain their full technical qualification well beyond upper

secondary with opportunities to complete through additional credits gained while working or through opportunities to resume study after a gap.

Policy makers might wish to consider how the gap between threshold and full competence might be bridged (for example, through additional credits or a short period of formal apprenticeship) to ensure that those students with T Levels are not unduly disadvantaged in the labour market in comparison with those who followed the apprenticeship route. This could potentially be offered as a follow-on from upper secondary or after a gap which allows students to find work in their chosen specialism.

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Appendix A

Review Protocol

The following protocol details the procedures followed in the evidence review including: the search terms/keywords; the locations/sources searched; the screens each study passed through for inclusion in the review; and the processes for recording and storing references and summarising literature.

Search criteria

Evidence was gathered through online searches, relevant bibliographic databases and reference searches. The searches were limited to studies published in the English language since 2010. Admissible literature included research studies (qualitative and quantitative) and relevant reports, articles and information from authoritative sources. It was supplemented with relevant 'grey' literature where this threw light on possible areas for more robust research.

While the focus was on classroom-based technical and vocational education (TVET) at the upper secondary stage, we also made reference to apprenticeships (in terms of how they fit with classroom-based TVET and how level 2 content is covered in apprenticeships) and the extent to which level 2 qualifications are available to adults as well as young people.

Literature searches

Using the protocol, we searched a wide range of online databases and websites, which offer electronic access to most published literature, including:

We searched the following sources:

- Online academic bibliographic databases (such as ERIC, Web of Knowledge, Education Research Abstracts Online, British Education Index, BERA) Abstracts and JSTOR) and Open access databases (such as Google Scholar and the Directory of Open Access Journals).
- International academic journals that publish articles on technical and vocational education.
- Websites of research and policy centres/organisations, such as, Eurydice, the European Commission, OECD, the World Bank, UNESCO.

- Websites of regional agencies, ministries/government agencies with responsibility for education/ technical and vocational education and relevant national associations.
- Statistics on qualification levels published by OECD and other international/national statistics agencies.

We also examined the reference sections of studies to identify other pertinent articles and reports.

The following search terms (and variants thereof) were combined with the names of the countries included in the review, different technical education areas/routes (business administration, hair and beauty, construction) and different levels of education (level 2 and level 3 and EQF/ISCED equivalents):

- Access
- Certification
- Classroom based
- Completion
- Course content
- Destinations
- Drop out
- Early leavers
- Employment
- Engagement
- Exit points
- Incentivising progression
- Job opportunities
- Motivation
- Outcomes
- Policies

- Prior attainment
- Progression
- Qualifications
- Route
- Skill levels
- Special educational needs
- Technical education
- Upper secondary education
- Vocational education

Study Selection

Having identified all potentially relevant information we screened the information for inclusion/exclusion and assess the quality of the evidence.

Screening studies for inclusion in the review (practical screen): Once literature and other evidence were identified, we assessed them for eligibility against the inclusion criteria identified above (using a three-stage approach to reviewing the title, abstract and full text).

Full text papers were retrieved for those that meet the inclusion criteria. Articles not meeting the inclusion criteria were set aside and saved, but not deleted. This permitted us to backtrack and re-evaluate the inclusion criteria and protocol at any point during the review.

Assessing the quality of each study or report (screening for exclusion): Once all potentially eligible articles were collected, we examined the articles more closely to assess their quality. This was done to ensure that the best available evidence is used in the review. Particular attention was paid to information obtained from websites, which, while published on the web, have often not passed any sort of quality standards checks.

Any potential disagreement between the reviewers was recorded and resolved by further discussion.

We maintained on-going records, not only on the reference information of each publication but the keywords that led to retrieval and notes on any other pertinent information.

Referencing and Bibliography

We used the Harvard system for in text citations and for the bibliography. The bibliography includes only reports and journal articles used in the final report, although we have maintained a list of works reviewed but which were excluded during the screening process.

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