INDUSTRY PLACEMENTS IN TECHNICAL EDUCATION PROGRAMMES:

A REPORT OF INTERNATIONAL CASE STUDIES

February 2019

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NOTES ON TERMINOLOGY

The language used to describe technical education varies between countries, and of course in translation. For example, upper-secondary institutions that in the UK we would recognise as further education colleges will often be referred to as schools elsewhere. Technical and Higher Technical education, for varied audiences, are described under different banners of vocational education and training (VET). In writing this report, we have tended to use terminology as set out by the Report of the Independent Panel on Technical Education (2016), with some reference to country-specific terminology where we hope this will be helpful for readers familiar with these systems. Specifically, the term industry placement refers to an extended period that a full-time student on a classroom-based technical programme spends in an employer's workplace, undertaking work-based learning that is relevant to their technical education programme. While the placement may not necessarily be completed in a single block, the overall length is substantial: a minimum of three months in the countries visited for these case studies.

SYSTEM DESCRIPTIONS

The countries we visited have different overarching structures for the provision of technical education. While short descriptions cannot capture the nuance of each system, we hope these are sufficient to give context to the report.

Finland
Netherlands
Switzerland

Young people may undertake work-based (a dual-apprenticeship model) or full-time classroom-based paths of education and training towards their chosen occupation. In Finland and the Netherlands, the vast majority of provision is classroom-based. In Switzerland, dual-apprenticeships predominate, with classroom-based provision more prominent in the French-speaking cantons (which were the focus of this study).

Norway

The typical '2+2' model in Norway offers two years of classroom-based study programme learning (including industry placement time), followed by a two-year training contract with an employer.

Denmark

We describe Denmark as an integrated system. Young people undertake a classroom-based basic programme (typically two blocks of 20 weeks, with the second block related to their main programme occupation). They then progress to a training contract with an employer (their apprenticeship) for the main programme. The apprenticeship has a dual model, with learners alternating time in the workplace and college. The overall balance between classroom and work-based time for the main programme varies across training pathways, with a third of the time spent in college on average. Although individuals have an employer training contract during their main programme, we included Denmark in this series of visits because of the close relationship between college and workplace learning throughout the apprenticeship.

The Appendix contains a longer summary for each country.

INTRODUCTION

> '**Recommendation 20**: In addition to work taster or short-duration work experience opportunities, every 16 – 18 year old student following a two-year college-based technical education programme should be entitled to a high-quality, structured industry placement.
>
> We believe what is required for college-based technical education is a radical shift in emphasis, from short-duration work experience to structured industry placements lasting much longer and with an employer in an industry relevant to the student's study programme… industry placements must be well planned and clearly structured to ensure the student has appropriate opportunities to learn pre-defined knowledge, skills and behaviours.'
>
> *Report of the Independent Panel on Technical Education, 2016*

Between November 2016 and March 2017, Gatsby, accompanied by college leaders and staff from the Department for Education (DfE), undertook study visits to explore how industry placements are structured in six technical education systems – Austria, Denmark, Finland, the Netherlands, Norway and Switzerland. The study visits focused on placements that formed part of full-time technical education programmes for young people, typically aged 16 – 19. Follow-up visits took place to several of these countries in 2018.

First and foremost, it is important to note that this report is not a rigorous academic study. The purpose of the visits was to inform discussions about how industry placements are implemented effectively, and identify enabling features that could inform expansion of placements in England. We met with a variety of stakeholders in each country, including government officials responsible for technical education, colleges, employers, students on placements, and social partners such as employer organisations and unions.

Not surprisingly, we found variation in the implementation of industry placements across the countries we visited. However, we observed several cross-cutting themes, which we think offer valuable insights. We report these themes 'as seen' – our interpretation of how things work on the ground in each country, with some exemplar case studies.

In all six countries visited, an extended industry placement is viewed as a valuable element of a full-time technical education programme. This is not to say that delivering industry placements comes without challenges – in each of the countries we visited, colleges and employers reported that they invest specific resource to building engagement. No single approach to employer engagement was observed. However, the importance of partnership cut across the technical education system, and required the support of all stakeholders.

The benefits of longer placements, a minimum of three months overall but typically six months plus[1], were universally recognised – both for the young person and the employer. For employers, taking students on placement was not solely an altruistic

1 A variation to this model was seen in Norway, where young people undertake around three months of placement time in the first two years of their programme, followed by a two-year work-based training contract (in the typical '2+2' model).

motivation (as you might expect for shorter work experience periods). Employers viewed industry placements as an opportunity, some would describe this as their responsibility, to contribute to the training of the future workforce, and in some cases placements were used as a route to identify and nurture potential future employees.

While it was not the focus of our study, we observed added benefits that industry placement practice brought to the closer engagement between technical education teachers and employers, including the upskilling of staff on both sides (for example, mentor training for employer staff, and industry updating for teaching staff).

This report highlights themes observed across all six of the countries visited, with case study exemplars. A brief summary of each country's technical education system for young people can be found in the Appendix.

ONE: SOURCING INDUSTRY PLACEMENTS

In each of the countries visited there are systems and key actors in place to organise industry placements at scale. These factors are explored here.

In each country, colleges hold overall responsibility for sourcing industry placements for every student, and have established processes to ensure this. Some countries also have national centralised support systems for industry placements, but this is more varied. Additionally, in the majority of the countries visited, students themselves take a significant responsibility for sourcing their own placement. This is driven by students' understanding of the contribution that a placement will make to their learning; they enrol on a technical education programme with this expectation.

We were also struck by the role played by students' specialist class teachers (and/or embedded placement coordinators with teaching expertise) in liaising with employers to establish and monitor placements. This teacher engagement was viewed as beneficial for embedding the placement outcomes as part of a study programme, and generating wider benefits from closer engagement between teaching staff and employers, for example, updating teachers' industry knowledge. Teachers work with other staff who provide a range of support services for placements including learner preparation and placement administration. Box One summarises the team's responsibilities.

Box One :

Typical responsibilities of college teams

- Employer liaison to build placements
- Pre-visit with the employer to ensure appropriateness to host a placement
- Establishing student learning outcomes between the student, employer and college
- Mentor training for the employer staff
- Preparing students before the placement
- Communication point for students during the placement
- Visiting students while on placement to monitor placement quality and track their progress
- Reflection of placement learning in college study provision
- Administration of placement records

HIGHLIGHTS

Denmark and Switzerland: We met class teachers who took responsibility for coordinating industry placements for their students as part of their teaching role. They were all specialists with industry experience, which gave them credibility with employers to build placement relationships. Dual professional teachers set and monitor learning outcomes, and reflect this learning in the students' wider study programme.

Finland: Classroom teachers also took responsibility for building sources of industry placements and visiting students on placement, supported by coordination teams who, for example, helped to prepare students for placements.

Norway: In Oslo, a college catering department employs a teacher for the bulk of their time to facilitate a trade network with local employers, through which industry placements are arranged.

Netherlands: Although all industry placements are advertised by a national agency, the SBB[2], college industry placement coordinators also reach out directly to employers to assist students who need greater support to find a placement.

Switzerland: We met class teachers whose role includes ensuring that an employer's workplace is appropriate to host an industry placement student. The teachers undertake initial employer visits to make this assessment, and the company is then added to a list held by the college and shared with students, who may use this to decide where they wish to apply for a placement.

Austria: We learned of wider college-employer engagement that also drove placement opportunities, visiting a college where employer advisory boards not only contributed to curriculum development but also placement sourcing. To encourage companies to support placements, the college used their employer engagement activities, such as teachers attending business events, and joint college-employer research and development projects.

2 The Cooperation Organisation for Vocational Education, Training and the Labour Market (SBB) has statutory responsibilities for technical education in the Netherlands, https://www.s-bb.nl/en/about-sbb.

Case study: Etterstad Upper Secondary School, Norway
Etterstad Upper Secondary School offers a well-regarded hospitality programme. One of the department's teachers is employed as a subject-specialist placement coordinator for 0.7FTE of their contract. They facilitate a network of local hospitality employers who are interested in offering a training contract (an apprenticeship) and/or industry placements[3]. Such trade networks are used to arrange placements in the local area, on a route-by-route basis. The placement coordinator also gathers feedback from the employer network on how well prepared young people are for their placement, and intelligence regarding alignment of the college curriculum with industry developments.

TWO: PLACEMENT STRUCTURES

The countries visited operated industry placements through different models, such as day release or block placements. In some colleges, we also saw variability in models between programmes. Often a degree of flexibility was described to us, to enable placement models to be modified to work with employer schedules, and support a student's learning outcomes.

In every country, we saw different approaches to the model and length of industry placements, with variation across routes, specialisms and level of study. However, placement length was typically set out by government and/or an institution with national responsibility for technical education. Placement models were set through a national curriculum, or alternatively determined at college level.

Interestingly, in each country the employers we spoke to about placement length all commented that short placements – for example, a few weeks – are of little benefit to them. The effort of setting up a placement is repaid when a student works with the employer for a longer period, enabling them to become productive and giving the employer the opportunity to become aware of and nurture a student's strengths.

HIGHLIGHTS

Netherlands: Each year of full-time study is mandated at 1,000 guided learning hours, of which an industry placement may make up between 20 – 60% of the curriculum. The average placement length is 250 hours per annum.

Norway: During a two-year college study programme, industry placements are undertaken during the flexible 'optional' module, which makes up to 20% of curriculum time in year one, and up to 30% in year two. In the county of Oslo, the 'Oslo Standard' for industry placements mandates a minimum of 168 placement hours in year one, and 253 hours in year two.

3 In Norway, young people typically undertake a two-year college programme, including extended industry placement time, followed by a two-year work-based training contract (the '2+2' model). There is flexibility in the approach (for example, learners may move directly into an apprenticeship and employers make arrangements for comprehensive curriculum delivery of the learner's off-the-job programme).

Finland: Programmes are expected to include at least six months of placement for work-based learning, and this length is typical, completed as either one or several blocks, or day release. However, providers may offer longer placements for particular programmes, and flexibility is encouraged where an employer is able to offer the education and training required for a young person to develop more of the competences described in the National Education Requirement for their programme.

Switzerland: Placements usually do not begin until the students' second year of college. The mandated placement length is three months, although this is typically six months, in some cases extending up to two years for four-year programmes. The length of the placement may be prescribed in the ordinance (standard and curriculum) for a particular occupation, although this is not usually the case. The placement duration is defined in the young person's training plan and may be determined by canton law.

Austria: In BMS (comparable with technical 16 – 18 classroom-based provision in England), students undertake placements during term-time, while in BHS (higher technical education provision), placements are undertaken in the summer holidays.

Denmark: Students' main apprenticeship programmes have an alternating structure, with 30 – 50% of learning time for their overall programme spent in college. This dual principle aims to offer all apprentices the opportunity to acquire the broad theoretical, practical and personal skills required for entry and progression in and through their chosen occupation. There is flexibility, for example, students may spend longer on placement if the employer requests this and the student's full curriculum can be met.

Case study: Truck Academy, Netherlands

The Truck Academy is a collaborative venture established through the combined efforts of several transport and logistics companies in the West Brabant region. The Academy model was designed to overcome difficulties in attracting young people into the sector. Employers have co-designed the curriculum and paid for machinery and equipment for the college, to ensure that students have regular opportunities to use the latest developments in technology. The placement model for students training with the Academy as a truck mechanic is as follows:

Year 1: No placement

Year 2: 6-month placement, focusing on truck maintenance

Year 3: 6-month placement, focusing on truck repair

Year 4: 6-month placement, focusing on diagnostics

Case study: Centre Professionel du Nord Vaudois, Switzerland

The Centre Professionel du Nord Vaudois (CPNV) is based in the Vaud canton of Switzerland, with 3,950 students, of which 2,950 are apprentices and 1,000 are full-time technical/higher technical or higher students. CPNV offers the following programmes:

- Automation
- Computer engineering
- Electronic engineering
- Mechanical engineering
- Media engineering

Mechanical engineering is a 4-year programme, comprised of 40% theoretical learning and 60% practical training in college. Students also undertake a placement between November of the third academic year to October of the fourth year. Students then return to college to prepare for their final course assessment, when they complete any elements of the curriculum they have not yet covered. This will vary between students depending on the context of their placement.

The following elements are agreed before students begin their industry placement:

- The placement principles are agreed between the college and the employer
- The content of the placement (learning outcomes)
- The student commitment agreement is completed
- The process for using the student log book during the placement
- The assessment record plan, which sets out how the placement will be monitored (at CPNV, the class teacher visits an industry placement student at intervals during their placement and updates the assessment plan on these visits)

THREE: PAYMENTS FOR STUDENTS

Whether students are paid while on placement was perhaps the most variable factor across the countries visited. Generally payment is implemented in countries where apprenticeship provision for technical education predominates. Where the majority of young people follow full-time classroom-based technical education programmes, payment is not common – although companies may choose to pay nominal bursaries. It is worth noting that students may be accessing national or local government study bursaries.

HIGHLIGHTS

In Austria and Switzerland, young people are paid a placement salary recommended by the relevant professional organisation or collective bargaining agreement for their particular occupation. In Austria, the Chamber of Labour addresses cases where students on placement are not paid. In Denmark, students are deemed employees when they enter into their main apprenticeship training agreement, and are paid accordingly [4].

In Finland, the Netherlands and Norway, usually students are not paid. Interviewees in the Netherlands described some employers offering small discretionary bursaries, and students may be eligible to claim for equipment and/or travel from their local government authority. In Finland and Norway there is no tradition of employers paying students while they are on placement.

The key principle emerging from our discussions with interviewees is that full-time students on industry placements - while part of the team - are not viewed as employees; the extended industry placements is a valued component of the learner's technical education study programme, with clearly established expected learning outcomes. Where an industry placement fails to meet this expectation for offering a learning opportunity, the college intervenes to address issues and, if necessary, find the student another placement.

FOUR: QUALITY ASSURANCE

As you would expect, systems are in place to ensure that industry placement environments are safe and appropriate for young people, and that employers are able to facilitate their learning. This section highlights the quality assurance approaches that we observed for industry placements in different countries.

We learned of quality assurance mechanisms in place for each country including:

- Pre-placement assessment of the employer to ensure it is suitable for hosting an industry placement
- Identification of a workplace mentor for the young person, and provision of mentor training
- Visits by class teachers to monitor students' progress towards learning outcomes
- Well-understood communication systems in place between the student, college and employer
- Documented feedback from students and employers
- Monitoring of students' log books

The balance of roles at a national or regional government and college level varied between systems, although all colleges we spoke to were clear that they held overall responsibility for the quality of a student's placement.

4 All companies in Denmark contribute towards the training of the future workforce by paying a fixed amount (around 400 Euros per full-time employee) into the Employer Reimbursement Fund. In return, this fund pays a company for a trainee's wages when the student is attending college during their main programme.

HIGHLIGHTS

Netherlands: The SBB accredits all employers who wish to offer industry placements or apprenticeships, and provides training for workplace mentors. A company may not be accredited to host industry placement students without nominating a member of staff to undertake this training.

Norway: In Oslo, employers are screened by the City of Oslo Education Agency, and must be accredited to offer industry placements and/or apprentice training contracts. There is a free training course, typically one-day, provided for workplace mentors, which is strongly advocated although not mandatory. Topics include communication for mentoring young people, and selecting tasks that offer opportunities for students to achieve their expected learning outcomes.

Finland: The college is responsible for quality assurance of a placement as part of its internal quality system, which is based on self-evaluation in partnership with the national evaluation agency, FINEEC. Training for work place mentors is not mandatory but encouraged by unions. The training modules require about three weeks to complete, and colleges are encouraged to offer flexible delivery to support uptake.

Switzerland: Responsibility for quality assurance also rests with the college. Usually the class teacher will visit the employer to ensure the work place is suitable to host a student. Each of the full-time students we saw on a placement had a college mentor, and was also being mentored by an employee of the company.

Denmark: Companies offering practical training contracts are audited by trade committees and social partners, to assess the breadth of activity a young person will be able to experience related to their training programme. An individual learning plan will be in place for each student. In college the dedicated support staff we met had a specialist industry background, enabling them to identify potential training challenges an individual may have.

Case study: Stadin Ammattiopisto College

Stadin is a multidisciplinary college run by the city of Helsinki, with 17,000 students (around 8,000 young people following vocational programmes; 8,000 adult learners; 1,000 learners studying a variety of other courses). The class teacher visits an employer prior to the placement in order to set up the placement contract and telephones a student on the second day. Towards the end of the placement, the teacher visits the student in order to evaluate learning as a whole. A second visit is arranged in the middle of longer placement blocks, for example, 6 – 8 weeks. For new employers, additional 'blind checks' are made to visit students on placement, with no prior announcement. Students keep a log book, which has a number of standard fields, and can also be adapted to different pathways and methods of recording (for example, learners may upload evidence).

Case study: SBB

The SBB advises ministers of Education, Culture and Science and Economic Affairs on alignment of technical education with the labour market. The agency also provides three statutory tasks for upper-secondary education:

- Accrediting and supervising industry placement companies
- Maintaining the VET qualification framework
- Analysing and publishing labour information; details of industry placement opportunities and apprenticeships; and reporting on fitness for purpose of technical education study programmes

The SBB industry placement database comprises around 250,000 training companies. In addition to a central team, around 450 SBB advisors work regionally to accredit companies and train their employee mentors. SBB also has processes for removing authorisation for companies to offer placements and/or apprenticeships when necessary, for example, because of safeguarding concerns, or following a validated complaint regarding learning opportunities.

Every new industry placement company must be visited for accreditation, and for re-accreditation after four years. New companies will always be visited by an advisor specialising in the particular occupational field. The accreditation visit checks that the company has a named workplace trainer; the experience and education of the trainer; safety of surroundings for a student to undertake their industry placement; and whether it is possible for the student to work towards learning goals relevant to their qualification in this environment. There is no fee for the accreditation visit. Separate accreditation is required for each route specialism that a company offers placements for, and possibly also if the company begins to offer placements and/or apprenticeships at a higher level. Work-coach training was introduced in 2016/17, free-of-charge to companies, reaching approximately 10,000 employer mentors that year.

FIVE: ALTERNATIVE PLACEMENTS

For a range of reasons, not all young people will be able to find an industry placement straightaway. Countries manage this in different ways; however, in all the systems we visited, the drive is to achieve an employer placement for each student that is relevant to their technical programme.

Internationally, we observed variations in whether industry placements were mandated or not, perhaps a reflection of their history of technical education. However, in all six countries we visited, the vast majority of young people following a technical pathway completed an industry placement at some point during their programme.

HIGHLIGHTS

Netherlands: An external placement is mandatory and students may not achieve their diploma certification without this. In the event that a young person does not find a placement straight away, the college will provide a temporary alternative. Arrangements on college premises are typically not acknowledged by SBB as a workplace, although such alternatives may be accredited if the college provision is judged to have sufficient commerciality – for example, a commercially run business away from the college campus. Colleges wishing to introduce new technical education pathways into their provision must demonstrate that they will be able to source placements for students.

Austria, Finland and Switzerland: Students who cannot be found a placement initially will be offered alternative 'live' environments in their college. However, all interviewees described these as not offering as rich an experience, and being temporary solutions in the vast majority of cases. In Austria, students may not take their final examination without having completed a placement, although this requirement may be waived in exceptional circumstances. In Finland, typically 30 out of 180 'qualification points' for the students' whole programme are gained during industry placement periods (comprising seven-hour days). Recent curriculum changes encourage longer placements, and greater employer engagement in assessment. Colleges may establish *external* commercial business premises (for example, a beauty salon located in the town centre; construction operations building local housing).

In Switzerland, students who undertake a placement on college premises may take their end-of-programme practical assessment, and their certificate notes that the placement was not undertaken with an employer. In some niche fields, college placements may be more likely. For example, at one small Swiss college we visited, we learned that their electronics students are more likely to undertake placements in college, whereas for mechanical engineering the college has never needed to provide an alternative.

Norway: Industry placements are commonly undertaken by students in both their first and second classroom-based years, usually before they move onto a two-year employer training contract. Where placements are in shorter supply, preference is given to second year students. Where a young person does not find a placement in their first year, a college may run short practical programmes in-house for this optional module. Second year students may need to move to another college to undertake niche specialist practical courses if they are still unable to find a placement relevant to their technical programme – although this is viewed as a final resort for a small numbers of students.

Denmark: There is no legislation that mandates a young person must progress to a training contract (apprenticeship) with an employer, however around 90% of young people on a technical pathway do so. Those learners who cannot gain an employment contract attend a college's practical training centre. This is a separate centre within a college, which offers occupation-related training, together with intensive help such as CV and application guidance to support young people transition to their apprenticeship. Very few learners complete their programme in a practical centre. The centres also work with SMEs in niche sectors where the length of placement found in the Danish system – typically around two-thirds of the student's programme time – is challenging. Students spend shorter blocks with the employer, and some time with practical centres.

Case study: Technical Education College (TEC), Denmark
The TEC's college-based training centre offers practical-based learning for young people who do not gain a training contract with an employer. These students are given intensive support including:

- CV writing and interview skills
- Access to an online portal for apprenticeship matchmaking

Young people must have applied to at least five employers before they are offered admission to the training centre. Students apply to the training centre as they would to an employer. The college has a target of 85% of their students having secured a training contract before the end of their college-based basic course, and has in place a programme of CEIAG support throughout this first year. Students who do not have a training contract before the start of their main programme will spend on average 170 days in the training centre, with only 5% of students finishing their studies here.

SIX: TRACKING PROGRESS

Industry placements form part of a student's technical study programme, and clear learning outcomes are established at the start of a placement. We observed several mechanisms for tracking students' progress during their placement, including student log books, teacher visits, and reflective monitoring of progress involving the student, employer mentor, and teacher.

In each country, students complete a self-assessment log book. These enable students to reflect on progress towards the learning outcomes established at the start of their placement, and set targets for the next period of their placement (eg for the coming week).

HIGHLIGHTS

Netherlands: Students must have a record of completing sufficient workplace hours for certification. How learning is tracked varies across institutions and between departments. Common elements were described as the encouragement of reflective learning by the student; recording of achievements and progress towards competence; and three-way meetings between the student, the college mentor and the workplace mentor. Students also meet regularly and frequently with their workplace mentors throughout their placement. During their placement, students are encouraged to take time each week to reflect on their learning, document this, and plan their learning for the following week with their workplace mentor. Students maintain a time log, which their employer signs off weekly. Colleges may use commercially available online tracking systems, or recording systems developed by the institution (either paper or online), and students may also be able to blog or vlog about their progress.

Norway: Students typically produce a written plan of the expected outcomes from their placement and how these will be achieved, complete a learning log reflecting on their progress throughout the placement, and put forward a finished piece of work and/or portfolio that demonstrates their learning. If a student is not acquiring the expected knowledge and skills on the placement, their college may source

another placement with a company where this can be addressed, and/or adjust the learner's college-based programme to compensate. Prior to their placement, students are given training in how to complete their reflective log book. Their class teacher visits periodically and the student's final placement assessment will review their log book, teacher observations and feedback from the company.

Finland: An industry placement contract is agreed between the employer, class teacher and student, setting out what each party will do, including the planned learning outcomes. Students complete a log book, and class teachers act as mentors for their students, visiting each individual on placement (the number of visits is dependent on the placement length). During their placement, a student may undertake formal assessments for their technical qualification. During these 'skills demonstrations', students show their capabilities against criteria specified in the national standard for the occupation they are working towards. Industry placements are the preferred opportunity for learners to complete skills demonstrations, but they also complete these assessments in college.

Denmark: We observed a student, teacher and workplace mentor discussing the student's self-assessment log book, and using an online progress monitoring system, which enables agreed outcomes and progress against these goals to be recorded. Each of these group can access the online system.

Case study: Skills demonstrations, Finland

The Finnish National Agency for Education is responsible for setting the national 'qualification requirement', which describes – for an occupation or cluster of occupations – competence, core curriculum and assessment criteria. Assessments are carried out during a student's programme through 'skills demonstrations', which ideally take place in the workplace. Skills demonstrations may be completed at any point during a student's study programme. While these assessments are considered formative, they also contribute to the student's final certification, which cannot be awarded until all required skills demonstration requirements have been achieved. Demonstrations are assessed by the teacher and employer, ideally at the employer's site during an industry placement period. Students typically write up a plan to describe how they will demonstrate their capability and explain the choices they made in the process (drawing on background research, calculations etc). A student must adhere to the standard set out by the qualification requirement, but has the flexibility to demonstrate capabilities in different contexts of their industry placement environment.

Exemplar: Study module – Nursing rehabilitation

Planning and demonstrating a rehabilitation activity for a mental or physical illness. Individual students carry out treatments tailored to their patient's requirements, adhering to the skills demonstration criteria, describing and explaining choices in their planning and reflecting on outcomes.

APPENDIX: SUMMARY NOTES OF COUNTRIES VISITED

AUSTRIA

Outline

Young people in Austria opt for an academic or technical pathway from age 14 to 15. Admission to different schools is determined by grading from lower-secondary education.

Around 80% of young people follow technical programmes, half via a dual-apprenticeship and half via full-time education and training, and about 20% of young people in upper secondary education follow general matriculation programmes.

For post-16 students, around 26% follow vocational matriculation programmes (= BHS), about 16% BMS programmes, and about 38% enter apprenticeships. In 2014/15, 18,289 students completed AHS (general education) programmes, 19,178 BHS, 11,694 BMS, and 49,526 completed an apprenticeship.

Programmes

Standards for full-time provision are developed by the Ministry of Education, informed by labour market developments, and the standards are implemented through the college curriculum.

Programmes are full-time (five days per week) for a school year of 180 days from September to July. The minimum number of hours taught per year for upper secondary education is 960.

In BMS education (intermediate vocational education), the following options are available:

- Technical, commercial and crafts school (three or four years)
- Trade school (three years)
- School of business professions (three years)
- School of fashion (three years)
- Hotel school, school of tourism (three years)
- School of social professions (three years)
- School of social services (two years)
- School for social care professions (two to four years)
- Agriculture and forestry trade school (two to four years)
- School of health and nursing
- Federal sports academy (three years)
- Business school (one or two years)

In BHS education (higher vocational education), the following options are available:

- Higher technical and commercial school
- Commercial college
- Higher school of fashion
- Higher school of artistic design
- Higher school of tourism
- Higher commercial school

- Higher school of agriculture and forestry
- Higher school for primary school teachers
- Higher school for social education

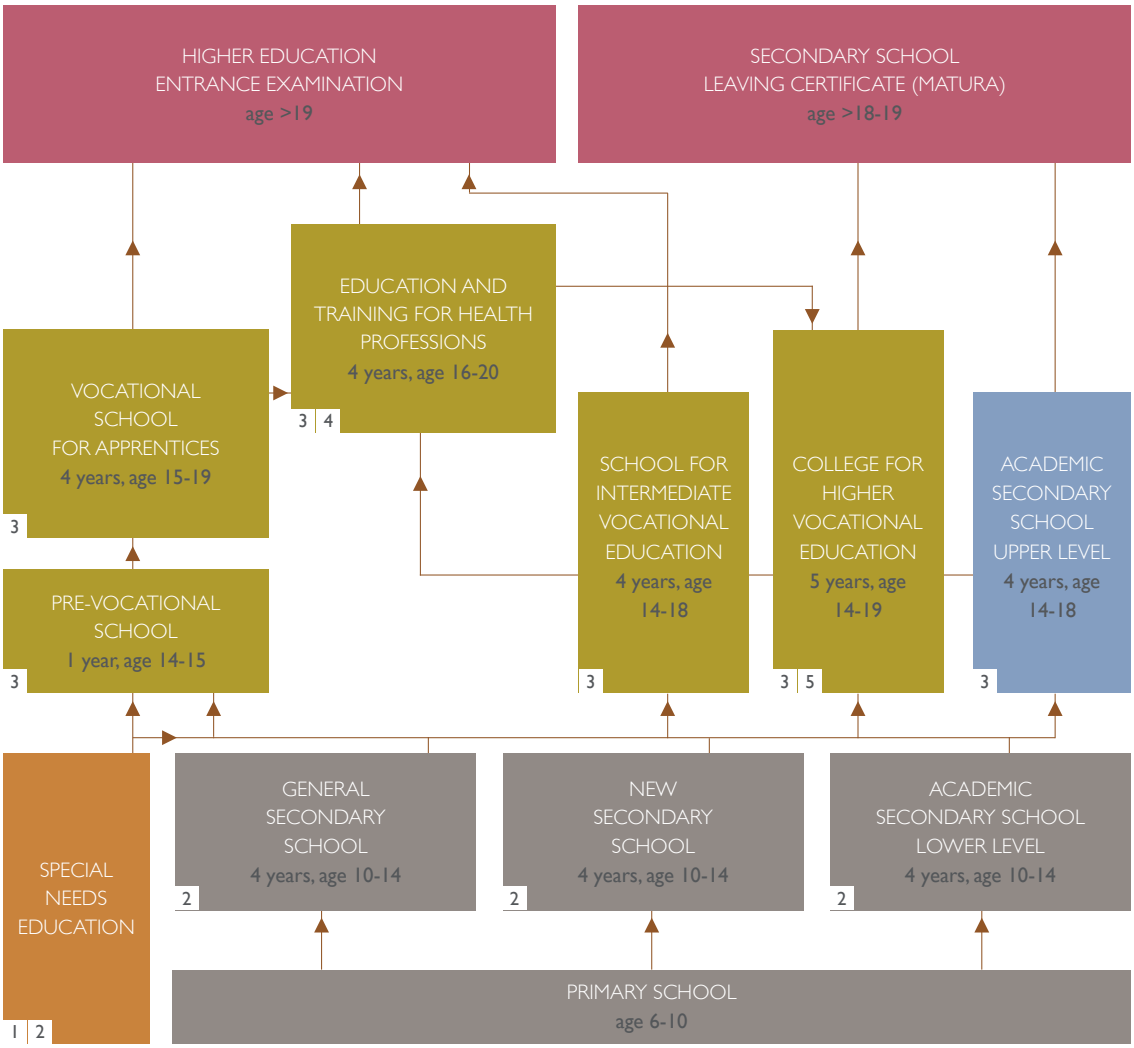
Once they have completed their programme, BMS students may join a one to two-year programme to complete the general education component of a BHS programme. This enables them to gain BHS matriculation, and progress to undergraduate programmes. Apprentices may also take this course if they wish to enter university.

Industry placements

- Placements are mandatory, waived only in exceptional circumstances. Students may not enter their final course examination without having completed a placement.
- There are longer (three-month) placements in the BMS programmes, which are comparable to 16 – 18 provision, than in the higher technical education courses (five years), where placements are undertaken in summer holidays (ie on top of a student's full-time course).
- There is an expectation for students to source their own placement, with support from the VET school, which if necessary may offer a live environment alternate.
- VET schools typically have a pool of companies they work with. The Chamber of Commerce may offer support in the selection of possible placement locations.
- General tasks and learning outcomes are set out in a placement contract.
- Students normally receive a small salary while on placement.
- Students receive a confirmation of participation, supplemented by a written report from the employer.
- Quality assurance is not centralised, with colleges making this judgement on the basis of feedback from students and companies.
- The Chamber of Labour provides information on any legal aspects of placements; checklists for companies, parents and students; and also an online platform for industry placement offers.

AUSTRIAN EDUCATIONAL SYSTEM DIAGRAM

- PRIMARY AND LOWER SECONDARY EDUCATION
- SPECIAL NEEDS EDUCATION
- VOCATIONAL EDUCATION
- UPPER SECONDARY EDUCATION
- EXAMINATIONS
- 0 ISCED LEVEL



DENMARK

Outline

The Danish VET system is a 'sandwich-type' or alternating programme. A first basic programme is completed in VET school. Approximately 20% of young people enrol on a VET programme immediately after leaving secondary school.

Learners coming directly from school follow a basic course (typically a general 20-week programme, then a second more occupationally specific 20-week programme); learners joining from work or other education (for example, the academic path) may enrol directly into the second basic programme.

The majority of learners subsequently gain a training contract with an employer (an apprenticeship), which alternates work-based and classroom learning (between 50 – 70% of time in the workplace), to enable individuals to acquire the theoretical, practical and personal skills required for entry into and progression in an occupation.

Learners may also take the 'EUX' path, completing both of the separate general upper secondary education requirements and a technical education programme.

Programmes

Following major reform in 2015, Denmark has moved to four broad 'basic' technical areas, leading to around 110 'main' programmes, with 300 specialisms. Main programme length varies from 2.5 – 5 years.

The Ministry of Children, Education and Gender Equality (hereafter referred to as Ministry of Education) governs the general framework for the VET system and supervises colleges. An advisory council for initial vocational training ('REU') is appointed by the Minister, and provides guidance, for example, on the structure of routes, the framework for content and assessment, and the accreditation of colleges. The Council is made up of industry sector experts nominated by social partners, and representatives of employers, teachers and students. The Ministry is responsible for approving new programmes based on recommendations from the Council, and for approving colleges that provide 'basic' and 'main' VET courses.

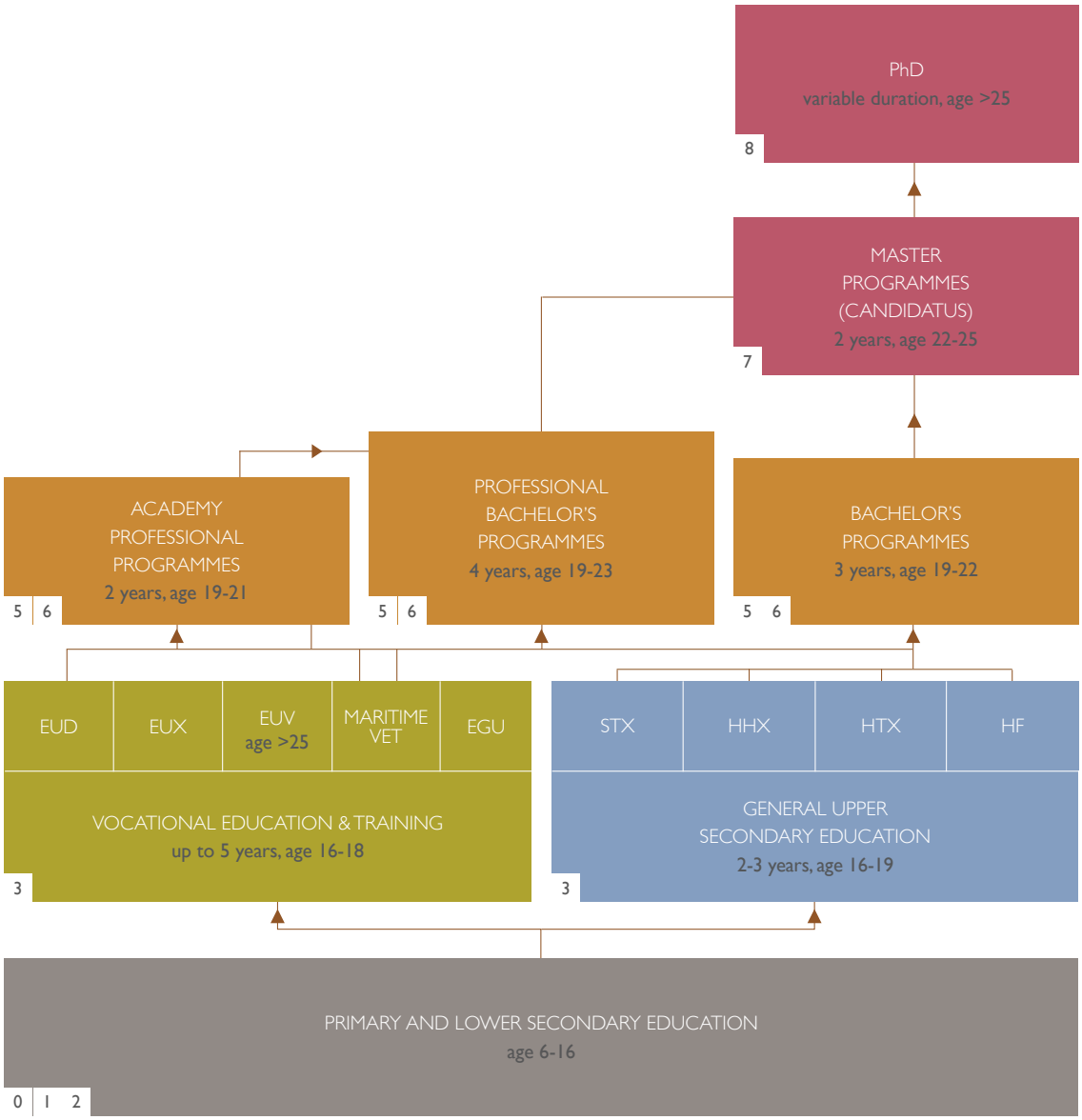
The Council works with around 50 trade committees, which describe the standards for each VET programme: determining the outcomes, assessment methodology and programme durations. The committees typically comprise 10 to 14 individuals, with parity of membership between employer and employee representation. Trade committees review students' progress to employment alongside labour market demand. They recommend the introduction of new standards, and adjustments or ending of existing standards, as required. In addition, the Ministry of Education can establish development committees to swiftly investigate emerging occupations and, if appropriate, develop new standards. This typically takes place in new areas of the labour market where there are no existing trade committees.

Industry placement highlights

- Responsibility for finding a training contract rests with the student, with support from their VET college. The vast majority of students gain a training contract (for example, in 2013, around 90% of students were placed with an employer).
- Learners alternate between blocks of time in college and blocks of time with their employer. There is flexibility in the system to allow for other models should the employer request this.
- The trade committees are responsible for quality assurance of the companies offering training contracts.
- Students have a final practical and theoretical exam (their 'Journeyman's test') to assess competence. This is examined by representatives from companies or trade committees.
- Practical training centres within a college can offer technical education in some main programmes for learners without a training contract while they continue to seek an employer. The centres also provide students with intensive CV and application support.
- Wages for apprentices are between 8,000 – 12,000 DKK a month, with the rate determined in a collective agreement and specified by the trade committee.

DANISH EDUCATIONAL SYSTEM DIAGRAM

- PRIMARY AND LOWER SECONDARY EDUCATION
- VOCATIONAL EDUCATION
- GENERAL SECONDARY EDUCATION
- HIGHER PROFESSIONAL EDUCATION
- ACADEMIC HIGHER EDUCATION
- 0 ISCED LEVEL



FINLAND

Outline[1]

At age 15, the majority of young people apply for a place at a post-16 institution, choosing up to five schools (upper-secondary VET or general [academic] schools) and/or field of study ranked in order of preference[2]. Entry is competitive, and entry requirements for technical fields vary, due to the content of the route and also its popularity. In 2014, 42% of school leavers chose classroom-based VET post-16, with 52% entering academic high schools.

Upper-secondary VET is predominantly delivered through classroom-based provision, with less than 10% of young people starting an apprenticeship straight from their basic school education[3]. Traditionally, companies have been reluctant to take on young people who have not completed at least some full-time technical education. This is seen as important for providing a grounding in knowledge and skills, and an opportunity for further personal development prior to young people entering the workplace as an employee.

Programmes

Students following classroom-based technical education programmes and apprentices work towards the same description of competence, referred to as national 'qualification requirements'. The Finnish National Agency for Education is responsible for setting qualification requirements, which describe – for an occupation or cluster of occupations – the competence standard, core curriculum, and assessment criteria for programme study modules[4]. The requirements are drawn up by groups comprising employers' organisations, industry trade unions, the Trade Union of Education and student unions, together with education and training advisers[5].

These 'qualification requirements' are structured into ten areas:

- Agriculture and Forestry
- Business, Administration and Law
- Education
- Health and Welfare
- Humanities and Arts
- Information and Communication Technologies
- Natural Sciences
- Service Industries
- Social Sciences
- Technology

1 A programme of reform is underway in Finland across all phases of education and training. We have endeavoured to reflect this where appropriate, although some decisions were yet to be confirmed at the time of our visit.

2 Currently the application process is centralised, although this is under review. In future, individuals may be able to apply directly to VET schools in order to allow greater flexibility for entry during the year.

3 http://www.oph.fi/download/177964_Key_figures_on_apprenticeship_training_in_Finland.pdf

4 For example, the Construction qualification includes four occupational specialisations: http://www.oph.fi/download/140413_vocational_qualification_in_construction_2009.pdf

5 http://www.oph.fi/english/curricula_and_qualifications/vocational_upper_secondary_education

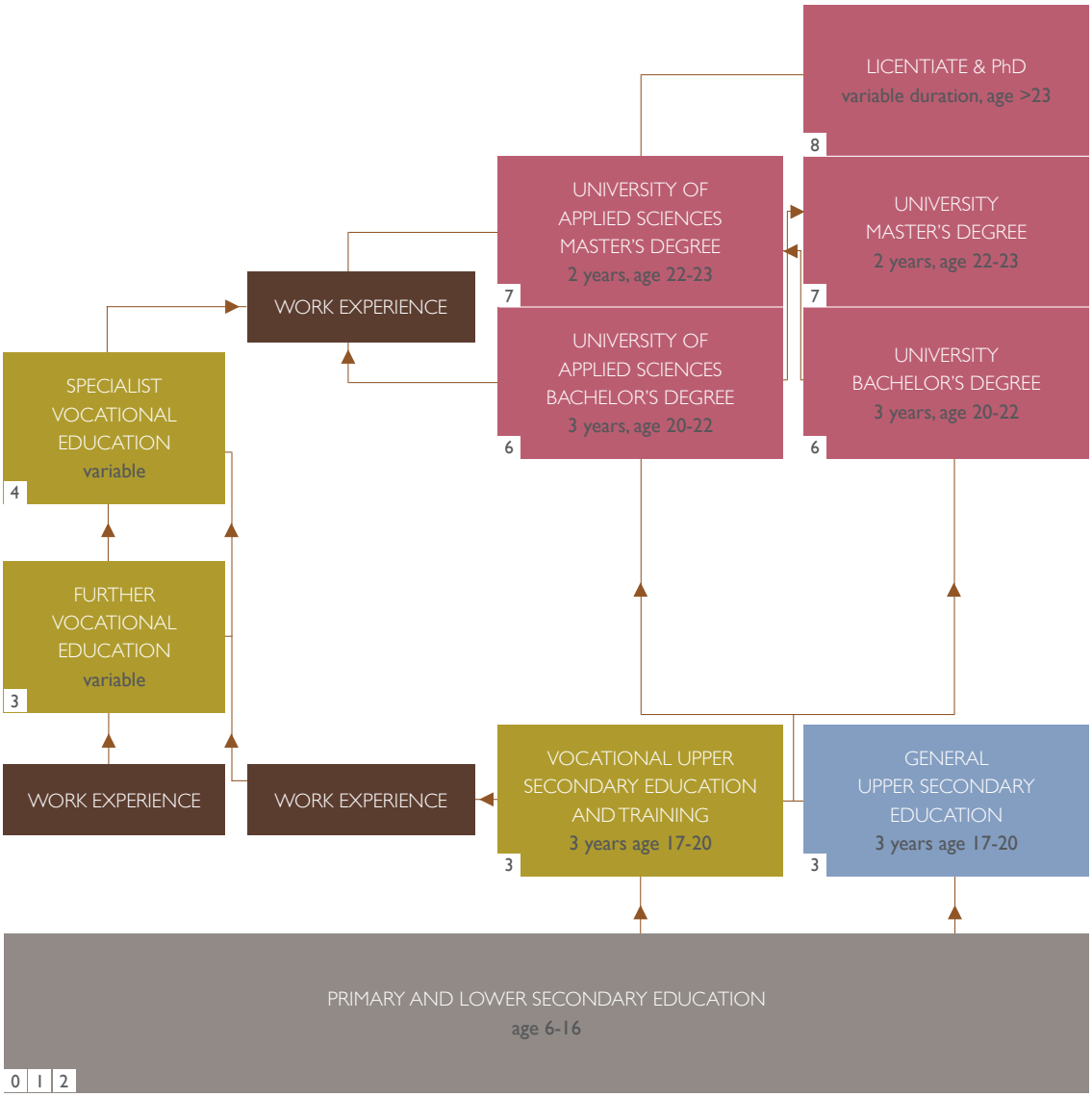
Within these, there are over 50 upper-secondary VET qualification programmes, which are full-time (five days a week) usually for three years. Each VET student has an individual learning plan, which should take into account accreditation for any prior learning. Current reforms emphasise opportunities for flexibility in individual learning plans, enabling students to gain a certification more swiftly if they are ready to do so.

Industry placement highlights

- An upper secondary technical study programme is expected to include at least a six-month placement for workplace learning.
- Some providers may offer longer placement time for certain programmes. Models for placements vary (ie day release or block placements). Flexibility is also encouraged – for example, where an employer is able to extend the placement and offer the training required for the young person to develop the competences described in the qualification requirements.
- The vast majority of placements are external with an employer. Although it is the college's responsibility to source placements for young people, students are proactive in gaining a placement.
- The college is responsible for quality assurance of the placement as part of its own self-evaluation system.
- A contract between the employer, the teacher and the student is agreed, including expected learning outcomes for the placement.
- Training for workplace instructors or trainers is not mandatory but is encouraged by unions. There is a nationally recommended curriculum for mentor training, taking about three weeks full-time, and colleges are encouraged to make delivery flexible to promote uptake.
- If a student cannot gain a placement then an alternate of a live environment, such as a restaurant, shop or beauty salon based at the college, might be offered, but this is considered unusual, and efforts continue to be made to move the learner onto an employer placement during their course.
- The National Agency for Education (previously National Board for Education) publishes a range of guides for colleges to support workplace learning, and several are available in English (http://www.oph.fi/english/publications/brochures).

FINNISH EDUCATIONAL SYSTEM DIAGRAM

- PRIMARY AND LOWER SECONDARY EDUCATION
- VOCATIONAL EDUCATION
- GENERAL SECONDARY EDUCATION
- HIGHER EDUCATION
- 0 ISCED LEVEL



NETHERLANDS

Outline

Around 50% of learners follow upper secondary VET (MBO), either via an apprenticeship (BBL) or classroom-based (BOL) option. Between 2009 – 2014, an average of 140,000 learners entered MBO per annum, and at any one time there are around 450,000 students in MBO, plus 25,000 students in twelve agricultural centres. 80% of these learners are BOL students, with 20% undertaking an apprenticeship. Apprentices are employed, typically spending 3 – 4 days in the workplace and 1 – 2 days in VET school, depending on their occupation and point in their programme.

Students may begin MBO programmes at one of four levels:

EQF Level 1: For students who do not have a basic education diploma, and are not ready to begin a higher level programme. About 10,000 learners at any one time (5 – 10% of the cohort).

EQF Level 2: Basic MBO, 10 – 20,000 (10 – 20% of the cohort).

EQF Level 3: Around 30% of the MBO cohort.

EQF Level 4: Around 45% of MBO students move straight into these programmes (at Level 3 for England) from lower-secondary education.

BOL students are funded for 1,000 contact hours per annum. Legislation mandates that BOL students must spend overall 20 – 60% of their programme hours on an industry placement. The average is 250 hours per year, with the percentage typically greater for higher-level courses. Models for the placement vary between VET schools, programmes and level of study – for example, blocks of time during a course, perhaps focused in the later years of a programme, or 1 – 2 days per week throughout a programme.

Programmes

The national system for qualifications is governed by the Ministry of Education, Culture and Science. Supporting central government in vocational education regulation is the Cooperation Organisation for Vocational Education, Training and the Labour Market ('SBB'). There is strong employer involvement in determining the content of routes and standards for occupational qualifications. SBB bodies include representation of social partners (employers, employees), VET colleges and private schools.

Currently, there are eight 'Chambers' (the equivalent of technical routes) with 176 'qualification files' (combined standard and assessment specifications), which set out the knowledge, skills and behaviours an individual should demonstrate to achieve the qualification. A qualification file is likely to include common core and some opportunities for specialisation to different occupations. In total, there are currently around 450 – 500 specialisms ('profiles').

Greater flexibility for specialisation and innovation is also offered by 'minor' units that make up 15% of a diploma, and final year students may take newly approved minor subjects as part of their programme. The SBB database currently holds around 500 approved minor units.

The SBB convenes panels of industry and teaching experts which draft the expected knowledge, skills and behaviours for each standard, although overall responsibility for defining these outcomes rests with the SBB. The SBB is also responsible for certifying and training employers who provide industry placements; publishing labour market information to feed into designing the vocational routes and standards; and providing the Ministry with a unified voice on skills policy and system reform.

Apprentices and classroom-based learners work towards the same qualification file. This model is designed to enable effective switching between the two options if an individual's circumstances change, or economic conditions see apprenticeship availability rise or fall. The industry placement for classroom-based students is regarded as a critical enabling factor for this outcome.

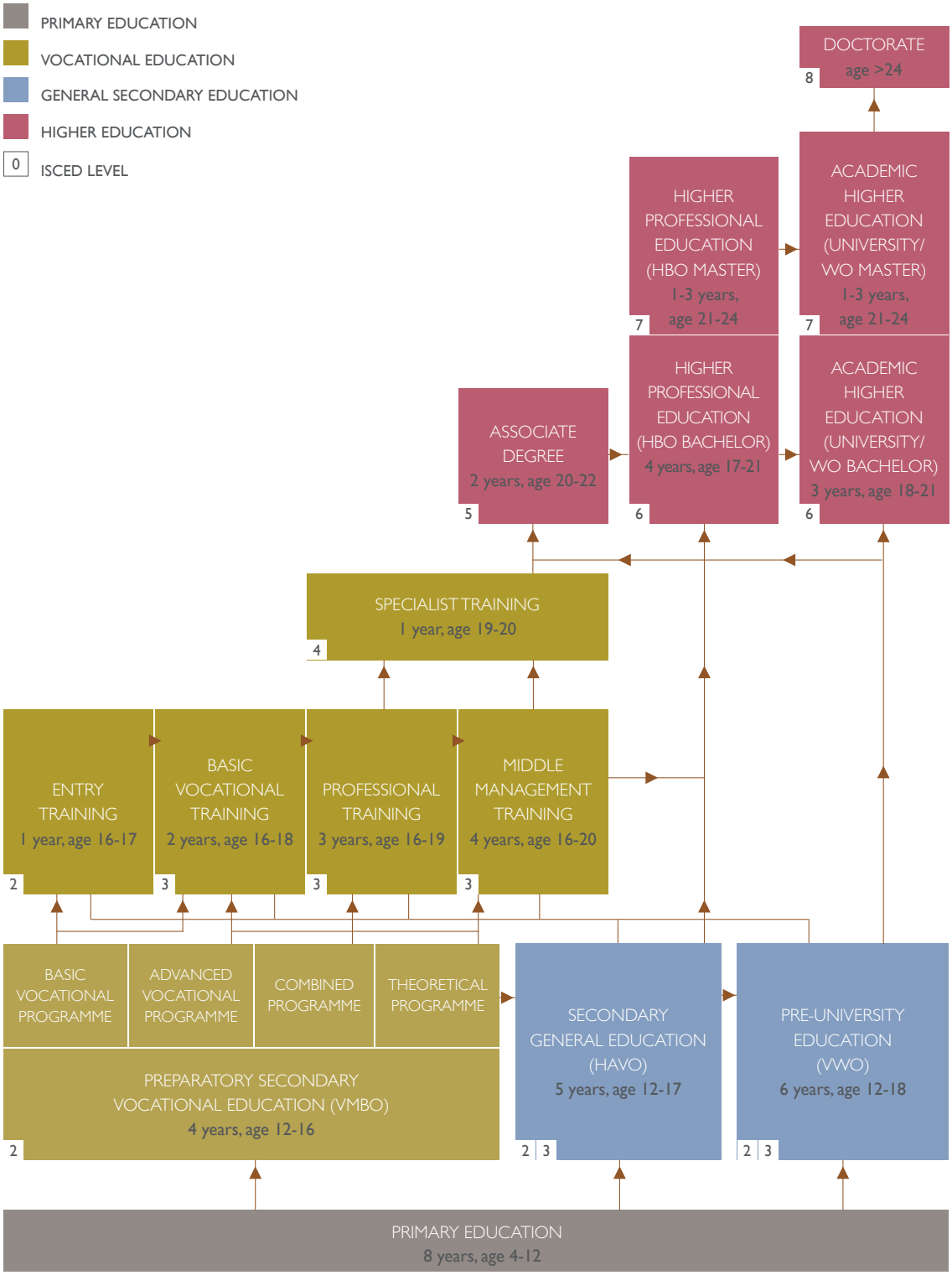
Industry placement highlights

- There is an expectation that a student will find their own placement, although all placements are listed on the Stagemarkt website (run by the SBB). It is of note that data for 2014 records 99.8% of businesses in the Netherlands as SMEs [6].
- If students have difficulties finding a placement, the college will reach out to employers on their behalf. Industry placement coordinators build relationships with employers who they know will provide appropriate support for students with greater needs.
- Colleges provide an alternative for the small proportion of students who do not immediately find a placement, but this is a temporary solution and is not satisfactory for completing the diploma. (Different arrangements are in place for SEND learners.)
- An individual may not gain their course diploma without successfully completing the industry placement component. The placement provides young people on the classroom-based option with sufficient time in an employer's workplace to apply and further their knowledge and skills, and gain behaviours that develop from immersion in the workplace. The approach is viewed as important for individuals from an apprenticeship or classroom-based path to be equally valued in the labour market.
- Employers must be accredited against quality and safety criteria in order to offer industry placements and/or apprenticeships. Accreditation is managed nationally by the SBB, with colleges then taking responsibility for ensuring that a placement is appropriate for a particular student. This reduces bureaucracy for the employer (an employer is accredited once per qualification file)[7]. Central accreditation is also considered to be a more efficient use of college resources, and provides government with intelligence for monitoring trends in industry placement availability.
- More than 40% of BOL students go on to work for the company in which they undertook their placement.

6 2015 SBA Fact Sheet, The Netherlands

7 More details on the conditions for accreditation by SBB is available here: https://www.s-bb.nl/en/companies/certification/conditions-certification

DUTCH EDUCATIONAL SYSTEM DIAGRAM



NORWAY

Outline

The cohort entering upper-secondary education each year is about 60,000 young people, half of which enter VET programmes. Approximately 80% of these learners follow the '2+2' model, attending college for two years followed by a two-year training contract with an employer (an apprenticeship). There is flexibility in the system for learners to complete more of their programme in the workplace, and a small number of learners undertake a four-year apprenticeship, with off-the-job study. Young people may also study additional academic subjects if they wish to progress to an academic programme at university. In 2016, overall there were around 240,000 young people in VET education.

Programmes

From 2016, Norway has eight technical routes, and five general study routes. The National Council for VET has established expert panels of employees and employers (Vocational Training Councils) for each technical route. These panels advise the Ministry on the expected learning outcomes for each stage of technical education. Each of these standards (referred to as a 'subject curriculum') describes the knowledge and skills a student will develop, and the principles for assessment in a particular route. The panels also monitor labour market needs to inform the review of routes and standards.

The framework of eight programmes is:

- Building and construction
- Design, arts and crafts
- Electrical trades and electronics
- Health care, childhood and youth development
- Agriculture, fishing and forestry
- Restaurant and food processing
- Service and transport
- Technical and industrial production

The college programmes are full-time (five days per week) for 35 weeks per year. In the first year, all students in a programme follow a common curriculum comprised of: 30% common core (general education, referred to as the 'six-pack' subjects, Norwegian, social science, natural science, maths, history and English); 50% common programme subjects (technical study); and 20% in-depth study element (optional module). The second year programme is similarly structured, with increasing specialisation of the technical programme. Students may move schools at the end of their first year in order to pursue a specialism that their college does not offer.

Students who complete their employer training contract and gain their craft or 'Journeyman's certificate' may progress to some undergraduate courses. Students who wish to enter other academic undergraduate degrees may also study a one-year bridging course. This may be undertaken after completion of the full VET programme,

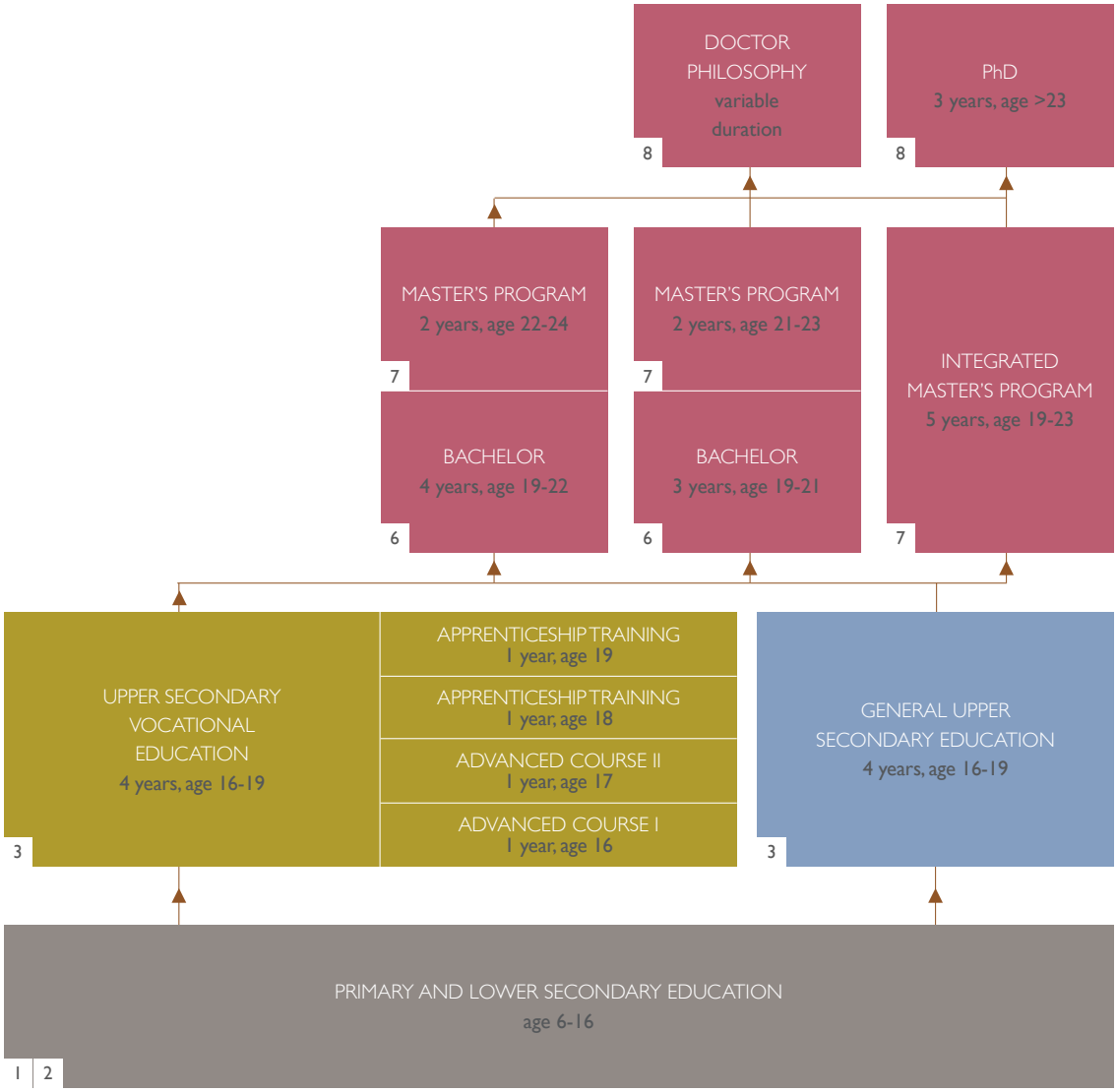
or for students who decide on this destination at an earlier point, after the first two years of technical education in college. The programme content deepens students' general academic education.

Industry placement highlights

- Industry placements are common for students in both their first and second classroom-based years. Where placements are in short supply, preference is given to second year students in preparation for their transition to apprenticeship.
- The college takes the major role in arranging industry placements in years one and two, although young people are encouraged to source placements themselves where they are able. Industry placements may be coordinated through college or employer networks with a specialist facilitator.
- The industry placement forms part of the student's optional study module (year one up to 20%; year two up to 30% curriculum time).
- Models vary depending on pathway and employer, but as an exemplar, the county of Oslo has worked with colleges and employers to establish the 'Oslo Standard' for industry placement time: year one = 168 hours; year two = 253 hours.
- Alternates are offered for students who do not find a placement in year one, with the college offering short technical courses in house. If this happens in year two, when students may opt for a specialism that their college is unable to offer, the learner attends another college for delivery of their optional module. Alternates to external employer placements are not the norm.
- Free training (usually one day) is provided for workplace mentors, and uptake is strongly encouraged by government and labour organisations for companies offering industry placements and/or apprenticeship training places.

NORWEGIAN EDUCATIONAL SYSTEM DIAGRAM

- PRIMARY AND LOWER SECONDARY EDUCATION
- UPPER SECONDARY VOCATIONAL EDUCATION
- GENERAL UPPER SECONDARY EDUCATION
- HIGHER EDUCATION
- 0 ISCED LEVEL



SWITZERLAND

Outline

The majority of young people at age 15 choose to enter VET or academic upper-secondary education. Around 65% select a VET pathway, either through an apprenticeship or classroom-based provision. Across the country as a whole, the vast majority of VET students (about 90%) enter an apprenticeship, however the proportion of apprenticeships is lower in French-speaking cantons, where a quarter of young people follow classroom-based programmes that include an extended industry placement.

Programmes

VET is governed collectively by the national government (the Confederation), the canton government and professional organisations. The Confederation is responsible for the strategic management and development of the VET system. A government agency, the State Secretariat for Education, Research and Innovation (SERI), works with the cantons and professional organisations to coordinate vocational education and training:

- Overseeing development and maintenance of 'ordinances' (standards and specifications) for approximately 230 occupations
- Regulating the Federal Vocational Baccalaureate, which gives VET students entrance to Universities of Applied Sciences

Classroom-based VET programmes may be three or four years depending on the occupation. Students are generally in full-time college (five days a week) for the first year, undertaking placements during their 2nd – 3rd or 4th years.

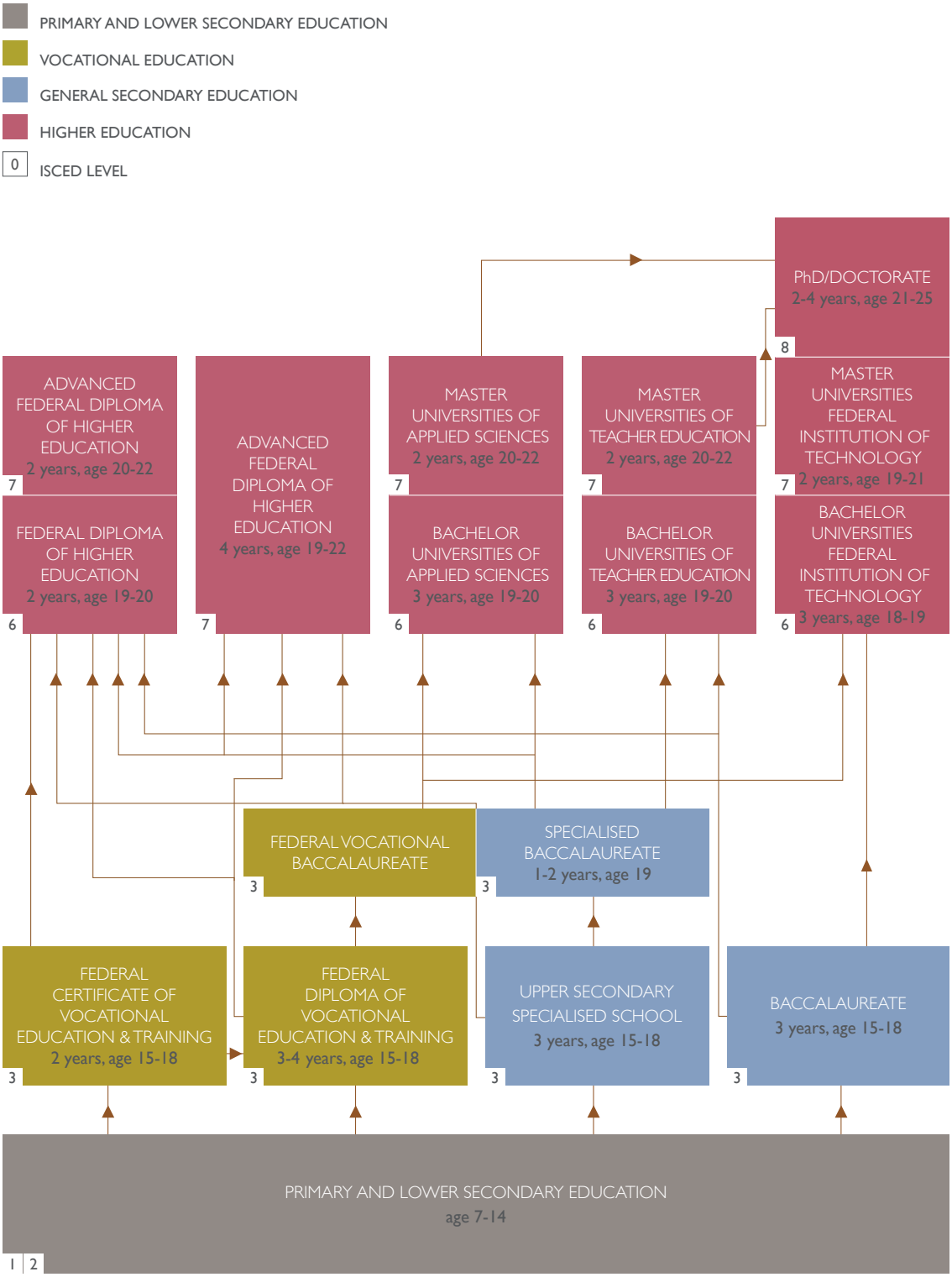
VET students may complete a 'maturity certificate' at a professional (tertiary) college if they wish to progress to academic university study. This certificate curriculum may also be delivered by upper-secondary VET schools for 15 – 19 year olds as additional study alongside their VET programme.

Industry placement highlights

- Industry placements are not mandatory but the majority of learners complete one. Students take the lead in organising their placement (for example, making applications or attending interviews) with support from their college.
- The length of an industry placement varies but is typically six months (minimum three months and maximum two years), and different models are employed such as block placements or days each week with the employer over a longer time frame. Placement length may be prescribed in the ordinance for an occupation but this is not usually the case. The number of days on placement and the duration is defined in the young person's training plan, and may be specified in canton law.

- VET schools have dedicated staff with overarching responsibility for industry placements. Class teachers also visit employers to assess suitability to host industry placements for particular programmes. The company is then added to an in-house list within the college, which students may draw from when searching for companies they wish to apply to.
- Learning outcomes are clearly defined before a young person starts their placement, based on competences set out in the occupational standard. The class teacher and learning mentor in the company agree the outcomes and how these will be achieved.
- The teacher and workplace mentor are both responsible for monitoring the student's learning in the workplace. Teachers maintain records of progress meetings.
- Young people in Switzerland are paid while on industry placement – typically ranging from 400 – 1,300 per month CHF. Before starting an placement, the school and student sign a contract with the employer stating the young person's salary, number of work days per week and transportation plan.
- It is not unusual for students to travel 50km for their industry placement. At the colleges we visited, learners were travelling up to 100km to gain experience in their technical field.
- It is unusual for a student not to undertake at least some external placement time, but if this cannot be arranged, a college will organise an internal placement and tailor the learner's final assessment to the opportunities this offers.
- The learning outcomes from placements vary depending on the employer, and college provision is adjusted to ensure that a learner covers their entire curriculum. A learner's final assessment comprises a theory examination (set nationally) and a practical assessment, which is tailored to the student's technical placement experience.

SWISS EDUCATIONAL SYSTEM DIAGRAM



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