SUPPORT DOCUMENT

NCVER

Higher apprenticeships in Australia: support document

National Centre for Vocational Education Research

This document was produced by the author(s) based on their research for the report, *Higher apprenticeships in Australia: what are we talking about?*, and is an added resource for further information. The report is available on NCVER's Portal: <http://www.ncver.edu.au>.

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Introduction

This support document contains material that supports the research report *Higher apprenticeships in Australia: what are we talking about?*

It provides more detail on two elements of the research:

- An overview of publicly available information on international models of higher apprenticeships, both established and under development (note that a summary of programs identified are presented in tables at the end of the review);
- A summary of the Industry Forum on higher apprenticeships, held with Industry Reference Committee Chairs in Melbourne on 31 August 2017.

International models of higher apprenticeships

Established models

United Kingdom

Excepting Scotland, the United Kingdom (UK) has nine qualification levels, from Entry Level to Level 8. The apprenticeship model starts at Level 2 with Intermediate Apprenticeships, equivalent to five good General Certificate of Secondary Education (GCSE) passes. The next level is Advanced Apprenticeships, which are Level 3, equivalent to two A-level passes. Higher-level apprenticeships are also available at Levels 4 and 5. They can offer an alternative route to traditional tertiary education as they can encompass Levels 6,7 and potentially Level 8, the equivalent of a PhD (see <https://www.gov.uk/what-different-qualification-levels-mean/list-of-qualification-levels>).

All levels of apprenticeships in the UK require an apprenticeship agreement and a commitment statement. The apprenticeship agreement details the individual employment arrangements between the apprentice and employer and also includes a statement of the skill, trade or occupation for which the apprentice is being trained. The commitment statement is a tripartite agreement between the apprentice, employer and education provider which outlines the mutual responsibilities of the three parties.

What are UK higher-level apprenticeships?

Higher-level apprenticeships include *higher apprenticeships* and *degree apprenticeships*. A sample of the programs available in the UK are shown in table 1 (presented at the end of the review).

Higher apprenticeships were introduced in 2009 to expand progression routes into higher education (HE) level and enable employers to develop their workforce. They have attracted increased government-funding since 2011, resulting in considerable expansion across programs (Mieschbuehler & Hooley 2015). Higher apprenticeships function like intermediate and advanced apprenticeships and offer sector-specific work-based training but vary in form between companies. They are designed to meet employers' needs at Level 4 or above. Although they appear to be taken more often by those already in the workforce, higher apprenticeships are aimed at school leavers aged 18—19 as an alternative option to studying for an academic degree (Lanning 2016). Claims by government and professional associations that higher apprenticeships are equivalent to HE qualifications may require caution due to variation in the range of content. The value of a program should only be accepted after close examination of its content (Hordern 2015).

There is a lack of clarity in where higher apprenticeships can lead, cross paths with degree apprenticeships, and which of these is equivalent to the foundation degree. The foundation degree is also a combined academic and VET qualification, often undertaken by those who have completed an advanced apprenticeship (European Commission Directorate-General for Employment, Social Affairs and Inclusion & IKEI Research and Consultancy 2012; Pye Tait 2016). Mieschbuehler, Hooley & Neery (2015), reported that a survey of 200 employers asked to discuss their experiences and understandings of higher apprenticeships found that other barriers and challenges also existed for this group, including:

- the cost of introducing the program;
- the challenge of changing businesses to suit the program;
- locating appropriate frameworks, standards and training providers.

The UK government released a 'Post-16 Skills Plan' to address these perceptions (Great Britain Department for Business, Innovation and Skills & Great Britain Department for Education 2016), based on the Sainsbury Review (Independent Panel on Technical Education 2016). This plan laid out technical education reforms in response to indications by stakeholders that the system was complex, difficult, confusing, disengaging and unresponsive. These reforms included clearer progression routes from Levels 4 and 5 to degree apprenticeships. Mieschbuehler, Hooley and Neery's (2015) survey also highlighted commonalities amongst companies with positive experiences of higher apprenticeships including:

- the development of systems to identify and select the best recruits (including internal applicants);
- established processes to support and progress apprentices;
- effective engagement with stakeholders;
- formation of partnerships with training providers.

In 2015, degree apprenticeships were launched, driven by a new industrial strategy (HM Government, 2017), skill shortages identified by employers (particularly in management, digital skills and engineering), aspirations to implement system-wide reforms, and a recognised need to develop new forms of degree courses that reflected employer-focused HE (Universities UK & Higher Education Funding Council for England 2017). Degree apprenticeships enable university students at Level 5 or 6 to achieve a bachelor's degree and go on to Level 7 to achieve a Masters, with potential for Level 8 (PhD equivalent). Most are local, include work-based training, paid tuition, a competitive wage, and are currently available in the following areas:

- Aerospace Engineering
- Aerospace Software Development
- Automotive Engineering
- Banking Relationship Manager
- Bespoke Tailoring
- Chartered Legal Executive
- Chartered Manager
- Chartered Surveying

- Construction
- Defence Systems Engineering
- Dental Technician
- Digital and Technology Solutions
- Electronic Systems Engineering
- Healthcare Assistant Practitioner
- Laboratory Science
- Licensed Conveyancer
- Nuclear Science
- Operations Manager
- Outside Broadcasting Engineering
- Power Systems
- Product Design and Development
- Solicitor
- Technical Support Engineering.

In both higher apprenticeships and degree apprenticeships, accountancy, engineering, IT, banking and finance, and public-sector programs have emerged. However, it appears that accountancy is returning to a work-based training model, and away from university-based recruitment (Lanning 2016).

The development of degree apprenticeships was a collaborative process, involving 'Trailblazer Groups' of employers within industrial sectors, who worked towards new standards and assessments that replaced over 200 existing apprenticeship frameworks (Mieschbuehler & Hooley 2016). UK universities were also involved in this process, collaborating with employers and local partners and investing time, energy and expertise into co-designing the new standards, programs, processes and requirements. These partnerships were also profoundly important in the implementation phase, particularly with small and medium-sized enterprises (SMEs), national employers, employer groups and other delivery providers such as further education colleges. The fast uptake of degree apprenticeships within many tertiary institutions is due to flexible learning models and quality assurance practices that are already in place. Previously established engagement with employers and an environment that supports work-based learning have also assisted this uptake (Universities UK & Higher Education Funding Council for England 2017).

It is worth noting that during the development phase, some sectors (such as aerospace, and construction) indicated that government consultancy was challenging, with concerns that government departments had minimal understanding of professional bodies and the importance of degree apprenticeships including built-in professional accreditation. Requests from industry representatives to develop apprenticeship standards that incorporated areas of shared core content before progression into specialist pathways were refused (Bishop & Hordern 2016). Some employers see the suitability of courses and relevance of the skills taught as unsatisfactory (Shadbolt 2016; Wakeham 2016), possibly resulting from government consultation that focused on specific dominant employers as the main occupational community, with less attention given to institutions, associations and practitioners (Hordern 2015).

From an end user perspective, degree apprenticeships can have a wide range of benefits, including company-specific benefits. For those who would not normally consider university, these apprenticeships offer a new way of life, increasing social mobility. The likelihood that they can remain within a business after completing their degree is a huge incentive for some students. For employers, an opportunity to lead and control approaches to skill development and the resulting outcome of having their skill needs met drives them to participate. Significant motivating factors for employers include:

- upskilling a workforce;
- reducing skill gaps;
- creating a thriving talent pool with healthy competition for places, providing a good selection of recruits;
- opportunity to engage with local stakeholders and partners
- long-term possibility of increasing economic growth and productivity.

Universities also appear to be very interested in providing these apprenticeships as they create an avenue to increase visibility and improve reputations with employers while developing valuable partnerships. Some institutions report an increase in student intake numbers and diversity, and a further increase in retention and graduate employability (Burnett & Thrift 2015; Caplan 2016; CFE Research 2016; Lanning 2016; McKnight & Birks 2016; Mieschbuehler, Hooley & Neery 2015; Universities UK & Higher Education Funding Council for England 2017).

Potential for tensions to exist amongst incentives in apprenticeship systems apply to all higher-level apprenticeships as well. For example, are students enrolling to complete the apprenticeship itself or to gain access to free university education? The latter diminishes the apprenticeship concept. Alternatively, students may be motivated to build a strong occupational identity. If so, this suggests a need for systematic, collective engagement between employers and apprentices across a sector, with sector-wide quality assurance mechanisms. Such an approach might reduce the focus on firm-specific skills and strengthen the acquisition of transferable skill bases while encouraging employment projection aligned with occupational identity, an outcome that would strengthen the apprenticeship concept (Graf 2017; Lanning 2016).

Overall, it appears to be too early to assess the effectiveness of degree apprenticeships in the UK in terms of quality, deliverables and coverage of occupations and sectors (Chankseliani, Keep & Wilde 2017).

Funding, quality, and standards of higher-level apprenticeships in the UK

An appropriate and stable funding system is a vital foundation for higher-level apprenticeships; particularly one that supports institutions and individuals in their choices (Mieschbuehler, Hooley & Neery 2015; Porter & Simons 2015). The recent Apprenticeship Levy aims to put control of funding into the hands of employers. It is too early to assess the effectiveness of the levy, but some observers suggest it will motivate larger levy-paying employers to try to recoup costs, such as by relabelling existing training as an apprenticeship. This response would affect the quality of higher apprenticeships and reduce the attraction of the program to potential applicants (Chankseliani, Keep & Wilde 2017). Indeed, the quality of both higher apprenticeship and degree apprenticeship models is under scrutiny. At present, the Quality Code covers all apprenticeships that involve a HE qualification. This code allows existing HE provider quality systems to accommodate new emerging apprenticeship

models; in this way, providers' quality assurance practices will continue as the apprenticeships develop (Quality Assurance Agency for Higher Education 2017).

Variations in quality are one reason why parents and students are wary of apprenticeships and vocational education in general. At present, apprenticeships in the UK range from those involving employment within high quality/high-tech environments, to those that are short-term, involving manual courses and not necessarily resulting in employment. Such diversity means that some higher-level apprenticeships appear to have a lack of structure and unclear progression opportunities; their quality and value are only visible upon close examination (Hordern 2015; Lanning 2016). While improving quality, including greater coordination across sectors and regions, is considered the best way to lift the status of apprenticeships, the standards approved for university provision, progression and accreditation have also greatly increased. There has also been a call for these standards to be transferable across sectors and roles rather than occupationally specific and updated periodically in growth sectors to meet the needs of both industry and young people. Employer involvement in establishing standards is important (Burnett & Thrift 2015).

Recommendations for the development of higher-level apprenticeships

UK-based literature focusing on higher-level apprenticeship formation (Burnett & Thrift 2015; Caplan 2016; CFE Research 2016; McKnight & Birks 2016; Mieschbuehler, Hooley & Neery 2015) makes the following recommendations for government and policymakers:

- Continue policy support
- Maintain higher-level apprenticeships within the wider apprenticeship system (Register of Training Organisations (ROTO) requirements, quality assurance processes, and marketing and communication)
- Funding including entitlements should be appropriate, sustained and accessible
- Provide clear, timely and succinct guidance on policy, process and projection to universities and employers
- Equip universities to promote these apprenticeships successfully
- Streamline application and administration processes
- Consult early with universities to ensure administrative processes are fit for the degree apprenticeship model and relevant within a HE context
- Maintain involvement with universities in future developments
- Promote VET community-wide
- Develop and maintain specific occupational standards to enable growth of the program
- Provide extra assistance to small businesses to enable them to take on apprentices
- Apprenticeship reform needs industrial partnerships between universities and companies important
- Quality must remain high
- What is already available in HE or FE should not merely be repacked
- VET should not be approached as a mass market or cheap option
- Parity of esteem and opportunity must be aspirations
- Strong engagement with trainers immersed in industry is necessary

- Innovation should be transferred immediately into the curriculum.

Recommendations for training providers:

- Consult with employers of all types and sizes about what they want for their workforces
- Create liaison teams to assist employers with the logistics of these apprenticeships (such as identifying where new apprentices could work in an organisation, matching needs with training providers, funding processes, supporting employers and apprentices through to completion)
- Coordinate apprenticeships across faculties and departments
- Engage and motivate senior management, academic staff, strategically important employers, and local enterprise partnerships early in the process
- Use local and international information on priority sectors, skills shortages, labour market trends and growth industries
- Explore and identify skills gaps and likely demand through strategic stakeholders
- Provide career advice that encompasses VET
- Create systems that are flexible and dynamic, so they can change to fit government requirement and maintain quality standards
- Provide sector-specific technology and cutting-edge knowledge and skills.

Recommendations for employers:

- Establish relevant frameworks and standards
- Work together to develop new standards
- Consult with experts on sector-specific issues
- Recruit suitable candidates.

Europe

Germany

The German vocational education and training system, also known as the dual training system, is firmly established in the German education system and is highly recognised worldwide (Federal Ministry of Education and Research 2018). Apprenticeships in Germany's dual system are the main pathway into employment for young people. Trainees in the dual system typically spend part of each week at a vocational school and the other part at a company, or they may spend longer periods at each place before alternating. The cooperation between these companies and the vocational schools is one of the main characteristics of the German dual system and is regulated by law. Dual training usually lasts two to three-and-a-half years.

Traditionally, there has been a strong separation between VET and higher education in Germany (Baethge 2006, as cited in Graf 2017). In recent times, however, there has been a gradual change through the development of dual study programs.

Dual study programs sit at the interface of VET and higher education. They are offered in areas that are well-aligned with the world of work and associated with high-skilled jobs, such as economics, engineering, computer sciences and health care. They are formally located at the post-secondary level but are not part of the higher vocational training system where master craftsman and technician

training sits. Instead, they are located within the university system. While they are not called higher apprenticeships, they are apprenticeship-like in that they are employment based with on-the-job training and off-the-job training. A dual study program involves a contract between the employer and student.

There are several types of dual study programs (table 2). The original type is the *ausbilungsintegrierende* (apprenticeship-integrating) dual-study programs which typically lead to a VET qualification as well as a bachelor's degree. The other types conclude with a bachelor's degree only (not with an additional VET qualification).

Table 2 Dual study programs in Germany

Type of dual-study program	Qualifications gained	Purpose
Ausbilungsintegrierende (apprenticeship-integrating)	VET qualification and bachelor's degree	Designed as an initial VET programme for prospective students with a HE entrance qualification. In some cases, also involves a vocational school.
Praxisintegrierende (practice-integrating)	Bachelor degree	Designed as an initial VET programme for prospective students with a HE entrance qualification.
Berufsintegrierende (job-integrating)	Bachelor degree	Mainly conceived as professional development for people already in the workforce.
Berufsbegleitende (job-accompanying)	Bachelor degree	Mainly conceived as professional development for people already in the workforce.

Source: drawn from Graf 2017

The dual study programs are of interest to people with HE entrance qualifications, who despite their academically focused secondary education seek hands-on, salaried, academic training with a good chance of being employed in the training company afterwards. Paid, practical and fast academic training is offered, which is likely to result in employment within the training company; very attractive benefits to a wide range of people (Graf 2017; Solga et al. 2014).

The form of the dual study program is typically negotiated between the HE organisation and the associated companies (employers). Hence, there is a much lower-level of standardisation in these programs in comparison with traditional apprenticeships. Only with the *ausbilungsintegrierende* program is there more universal in-company and external standards as this is associated with the VET qualification obtained within the program. In terms of funding, while the practical part of dual study programs is financed by the training companies (the employers), the mix of private and public funding for the theory part varies from case to case. Funding, in-company wages and learning content all vary on a case-by-case basis. Unions are involved at all levels and law that defines apprentices as employees regulates protection from dismissal, access to insurance programs, and mandatory individual training plans/training contracts between students and employers (European Commission Directorate-General for Employment, Social Affairs and Inclusion & IKEI Research and Consultancy 2012; Graf 2017; Smith & Brennan Kemmis 2013).

The principle behind dual study courses is the social collaboration model, which provides governance over the clear link between theory and practice at organisational and content levels (Dion, 2015). The federal government plays a key role in legislating and coordinating some aspects of the dual system, while employer organisations and trade unions collectively govern the continuous updating of training

conditions, regulations, occupational profiles, and professional competencies. Training standards both in-company and externally, particularly those relating to VET qualification components, span all industries in Germany which keeps content consistent (Dion 2015; Graf 2017; Smith & Brennan Kemmis 2013). By embedding dual study programs within the constantly evolving labour market, apprentices receive a high standard of relevant training and occupation-specific skills that employers can choose from, reducing a company's level of risk and saving money during the recruitment process (Graf 2017; Solga et al. 2014).

Other European regions

What constitutes an apprenticeship varies across Europe, from the basic organisation of funding, learning approaches and institutional arrangements, to quality and governance. There is also diversity amongst the occupational titles gained with qualifications (Mieschbuehler & Hooley 2016; table 3, presented at the end of the review). There is no perfect system; every model has strengths and weaknesses, but there are trends and similarities across all systems. In many cases federal governments offer support for training programs, programs are aimed mainly at young people and completion leads to nation-wide recognised VET degrees at various levels. In-company trainers deliver work-based elements of apprenticeship as per contracts between employers and apprentices, some countries using three-party contracts (between company, VET centre and student). In some cases, a long history of apprenticeship within the education system enables apprenticeships to act as a vehicle for social inclusion. In other cases, apprenticeship is perceived to restrict access. Employers, employer organisations and trade unions govern many of the systems collectively (Chankseliani, Keep & Wilde 2017; European Commission Directorate-General for Employment, Social Affairs and Inclusion & IKEI Research and Consultancy 2012; Federation for Industry Sector Skills and Standards 2013).

Similarly to Germany, Switzerland and Austria are developing hybrid forms of work-based academic education that combine elements of vocational training and higher education (Graf 2016). However, unlike Germany, in Switzerland and Austria these hybrids have been integrated into the traditional model.

The Swiss VET system is the mainstream upper secondary program and consists of combined initial VET (IVET) and universities of applied sciences (UAS). This system offers an institutionalised path to HE studies at bachelor level preparing around 70% of students from a broad cross-section, including high achievers, for occupations ranging from white to blue collar (Graf 2016; Hoffman & Schwartz 2015). Like the German dual system, there are strong historical links here too, with a culture around VET that is positive and supportive. Legislation mandates the participation of employers, unions and trade organisations but this is not their only motivation as Swiss society considers it obligatory to help prepare generations for employment. As a result, companies reap the economic benefit (Dion 2015; Hoffman & Schwartz 2015). Apprentices are 16—19 years old and rotate between the workplace, intercompany courses and training centres/schools over 3—4 years during highly personalised training that is flexible to change and can lead to further study. Wages are minimal but attractive to the target age group; making it easier for companies to recoup costs (Bewick 2015; Hoffman & Schwartz 2015).

A hybrid organisational model that links vocational and academic education in Switzerland is achieved through a link between initial vocational education and training and the universities of applied sciences (IVET-UAS) (Graf 2016).

> Switzerland differs from Germany and Austria in the strength of its 'tertiary B' sector, which contains a number of high-quality but non-academic tertiary vocational institutions offering programs of higher vocational training. While apprenticeship completers in Germany and Austria may find their pathway options for further study restricted, these institutions can offer attractive routes of progression for Swiss apprenticeship graduates, thereby encouraging permeability between pathways. (Dion 2015, p.28)

These Universities of Applied Sciences were created in 1995 along with a new certificate program, the vocational baccalaureate. The vocational baccalaureate is targeted at the most ambitious of apprentices and is available in the fields of engineering, business, design, health, social work and art (Graf 2016).

In Austria, students can choose from several vocational schools, some of which have the option to prepare them for the university entrance exam (Dion 2015). Young people who enrol in a VET college (*Berufsbildende Höhere Schulen)* complete a double qualification of a higher education entrance certificate and an official VET certificate (Graf 2016). This program, that takes five years, offers access to higher education (through the academic baccalaureate) although many move directly into the labour market (Graf 2016). VET colleges cover the fields of engineering, arts and crafts, business administration, management and service industries, tourism, fashion and design. The federal government legislates and regulates this system while the state levels manage running the programs (Dion, 2015).

In the Netherlands, a two-year associate degree enables transition for vocational specialists, workers, job seekers and VET students into HE, as an alternative to entering directly into a four-year bachelor's degree.

Students in Denmark have many options for furthering VET at the tertiary level with mandatory three-month apprenticeships integrated into all courses. These courses are also used for professional development amongst skilled workers (European Commission Directorate-General for Employment, Social Affairs and Inclusion & IKEI Research and Consultancy 2012).

In France, apprentices can undertake degrees or the university technological diploma, with governance over the apprenticeship system held at a local level, unlike many other European countries (Dion 2015; European Commission Directorate-General for Employment, Social Affairs and Inclusion & IKEI Research and Consultancy 2012).

Italy has been developing higher apprenticeships and industrial PhDs. These PhDs are quite different from traditional doctoral degrees and are closer to internships. Both programs span upper secondary VET and post-secondary HE and are approximately three-years in length. Training occurs in line with work done at the company under individual training plans, which are considered integral in many European models (Casano 2015).

Spain has recently increased access from higher VET to university degrees in response to system-wide reforms (European Commission Directorate-General for Employment, Social Affairs and Inclusion & IKEI Research and Consultancy 2012).

Recommendations from Germany and across Europe

European dual systems are not directly comparable to other concepts of stage or level based vocational education; nonetheless, the following general observations are worth highlighting (note that these are not necessarily specific to higher apprenticeships):

- Established school- company and youth-company linkages assist transitions;
- Certifying/standardising work-based training processes increases transferability of occupation-specific skills between companies;
- Education system and labour market linkages should be established with social partners and trade unions as well as traditional linkages with companies and employers;
- There is no single and commonly accepted definition of apprenticeship; different stakeholders have different views on what an apprenticeship program is;
- Different countries have VET programs with different characteristics, all called 'apprenticeships'. A broad definition of 'apprenticeship-type' schemes (those which formally combine and alternate company based training with school-based education leading to nationally recognised initial VET certification degrees), is necessary;
- Contracts need regulation by law, apprenticeship rules, or collective agreements; specifying duration, balance between training and work-based activities, working conditions, remuneration etc;
- Although all employers must pay a wage, there are important differences amongst countries as to the amount paid; minimum national wages and collective agreements are respected;
- Quality is vital, so minimum standards must be met in all workplaces to prevent firm-specific skills dominating;
- Standards should include content and curricula, terms of training, duration of work placements, required resources, assessment outcomes, and qualifications of trainers.

Asia

In Singapore (table 4, presented at the end of the review), students may opt to enter into one of the SkillsFuture Work-Study Degree Programmes (WSDP) which is a collaboration between academia and industry partners (Singapore Institute of Technology 2018). The programs are run by the Singapore Institute of Technology in partnership with several companies and agencies. They are supported by the Ministry of Education. Two modes of these programs are available: term-in/term-out, where students alternate between spending one or two trimesters in university and the workplace; and work-day/study-day, where students alternate between working three or four days in the workplace and studying at university for the remaining one or two days each week. Some of these programs are available to 'in-employment upgraders' and must obtain a letter of support from their company as part of the application process. Bachelor qualifications through these programs are available in areas such as hospitality, information and communications technology, engineering, finance and business.

Models under development

Asia

The Korean government established the current apprenticeship system in 2013 to address youth unemployment and make skill supply more responsive to labour market needs, although development in the Korean VET sector has been ongoing for decades. Two paths are available: apprenticeships for new workers, which follow a qualification plus degree structure and adhere to college degree requirements, and where students undertake study and work-based training; and apprenticeships for students, which provide high school plus college in an integrated Uni-Tech structure. These include Industry Professional Practice (IPP) where university students in their final years also participate. IPP subjects generally include science, engineering and business but recently many pilot programs have focused on humanities, social science and fine art. Two significant differences between the Korean and European approaches are that the apprenticeship for new workers (qualification plus degree) requires companies to include relevant professions in their program development teams and that limited financial support is available from the government (Kang, Jeon, & Lee 2017; Barabasch, Petrick & Park 2017).

Skill development in response to industry needs is also the driving force behind major reforms to VET in India. As part of the National Skills Development Policy (2009), formal workplace training programs have been scrutinised. Apprenticeships, supported by well-established legislative and administrative frameworks, have been vital in the strengthening the link between industry and institutions and effectively assisting school-to-work transitions. Indian apprenticeships must continue to develop to reach the standard of international systems, by raising employer incentives, increasing resourcing and utilisation, and enhancing quality (International Labour Office & World Bank 2013).

New Zealand

During 2014—15, to increase the number of engineers as per the New Zealand government's strategic plan, the Tertiary Education Commission (TEC) began researching the viability of apprenticeship models to educate degree level engineering technologists. Success of such models was seen to be directly related to the process of curriculum development, requiring a three-way relationship between employers, policymakers and tertiary institutions (Tertiary Education Commission 2018). Lessons learned in the development of UK degree apprenticeship models were used as a guide, with focus on the government’s employer-led approach. In the UK this involved establishing trailblazer projects with the aim of creating a range of new apprenticeship standards and assessment approaches in different sectors and occupations. The projects were led by a range of employers with assistance from professional bodies and the standards created covered small to large businesses.

During phase one of the pilot project in New Zealand engineering employers and representatives from ITPs developed a degree apprenticeship standard which focused on asset management. Now in phase two, the proposal has been successfully reviewed by one of the largest providers of apprenticeship degrees in the UK, Manchester Metropolitan University. Implementation of the engineering degree apprenticeship is expected to include expansion of the initial standard developed during phase one (Tertiary Education Commission 2018).

Recommendations from New Zealand

Recommendations from the research undertaken in New Zealand include (Goodyer, Poskitt & Mackay 2017, p.11—12):

- Give people broad experiences through their training so they are better prepared and more flexible to employ.
- Invite participants from a range of locations; organisational types; roles associated with the occupation (e.g. consultants, contractors); mixed gender, age and cultural groups.
- Build in sufficient time to allow employers to balance various commitments along with the requirements of the project, allow employers freedom to explore concepts and issues of immediate concern to them before focusing on the prime task of the project.
- Create multiple pathways, from school leavers to those with employment experience who wish to reskill or upskill.
- Allow those with employment experience to be granted credit for relevant expertise and thereby encounter a shorter and adapted 'training program'.
- Develop a marketing plan to begin recruiting students for program start.
- Confirm numbers of apprentices for first intake and where they will be located. This may have a bearing on which institutes of technology and polytechnics (ITPs) will be involved in developing a program of study (since they need to ensure access for students in rural, regional and urban areas).
- Any new program will need to be quality assured.

United States

Although the US has generally excluded apprenticeship in vocational reforms, an increasing interest in international apprenticeship models has resulted in innovative programs appearing around the country (Steinberg & Gurwitz 2014). For example, in Michigan a 3-year German-style dual study apprenticeship model, MAT2 (table 4), enables students to receive an associate's degree, DOL Registered Apprenticeship Certificate of Completion, and an internationally recognised German DIHK-issued certificate. A collaborative consortium of small- and medium-sized manufacturers developed this program. A management framework consisting of enterprising non-profits, training providers, companies, employer associations and states is common for these new programs (Steinberg & Gurwitz 2014). Some programs (table 4), enable apprentices to complete their high school diploma, a postsecondary certificate or degree, and certification of industry-recognised competencies applicable to employment in a high-skilled occupation (Lerman 2014). Others provide an associate degree or technical certificate within the technical trades which can lead to a bachelor's degree and master's degree depending on the field (Olinsky & Ayres 2013).

Developing the workforce through expanding apprenticeships is becoming a focus for the US government; these programs cost less than college, impact on earnings faster, meet the skills needs of businesses/industry, and policymakers can create pathways to the middle class for young people (Lerman 2014; Olinsky & Ayres 2013). The main incentive for students, earning while learning, echoes what we have seen in nearly all other examples in this review.

Recommendations from the United States

The US is at the beginning of its reforms to the vocational sector, particularly apprenticeships. However, the literature from the US suggests:

- Policymakers and employers should be the first stakeholders to persuade about expanding apprenticeships;
- Effective marketing, business engagement, financial incentives, and skill assessments are good strategies to expand apprenticeship occupations, sectors and enrolments;
- A combination of innovative local programs and drawing from existing international programs is best;
- Leadership at policy and program levels is vital;
- Strong intermediaries are a vital part of stakeholder coordination, employer engagement, and the development of targeted high-demand, high-growth occupations and skills standards between stakeholders.

Concluding remarks

Apprenticeship systems differ across sectors, states and regions largely due to cultural aspects, policy development and the basic aims of the system itself. For some, these systems intertwine with the labour market through rich evolution and lengthy traditions. Others are commencing their engagement at the basic level of apprenticeship, able to integrate lessons learned from the outcomes experienced internationally. There are also many vocational systems undergoing major reforms, which include enhancing apprenticeship models to incorporate higher education or alternatively developing higher education systems to incorporate apprenticeship components. Either way, a major theme throughout the literature is the engagement, capacity and commitment of employers within the educational, political and economic contexts involved.

Table 1 UK program samples

Organisation	Length	Based in	Benefits	Subjects	Requirements	Curriculum	Qualifications
BAE Systems	4 yrs	UK	Study leave, tuition paid, salary with yearly increases, pension, car lease, share schemes, 25 days annual leave, Student Union membership	Engineering	5 x GCSEs at Grade A-C / 9-4 (or equivalent) including Maths, English and Double Science 2 x A Levels in Maths and Electronics or Computing (grade C or above) or BTEC Diploma in an Electronic or Computing discipline	1st yr: study 2nd – 4th yrs: part time studies and full time work placements	NVQ level 4 extended diploma work towards becoming a Chartered Engineer
Barclays	3-4 yrs depending on program	UK	Study leave, tuition paid, salary, potential to increase, annual performance-related discretionary award.	Group finance, Internal audit, Leadership management, Relationship management	At least 80 UCAS points (or predicted) from 2017 onwards *or* 200 UCAS points pre-2017 *or* a year's work experience	Unspecified	*Group finance*: AAT Levels 2, 3 & 4 qualifications *Internal audit:* Business Administration QCF Level 3 & 4, Institute of Internal Auditors Certificate Accreditation *Leadership management*: BA (Hons) in Business Management & Leadership, CMI Chartered status *Relationship management*: industry-recognised banking qualifications, membership of a professional body
Deloitte	15 months – 4 yrs depending on business area	UK	Study leave, tuition paid, mentor/buddy program, salary	Audit & Assurance, Business & Financial Advisory, Cyber, Governance, Risk & Regulation, Human Capital, Strategy & Operations, Tax Consulting, Technology	A Levels = top three grades sat in the same year and first sitting over 2 years (excluding General Studies).	Unspecified	In most cases, this is not a degree course, more of an alternative to University that includes highly transferable professional qualifications
Fujitsu	4 yrs	UK	Tuition paid, salary, annual pay rise, bonus upon completion, funding for books, some travel to university paid, 25 days annual leave,	Information Systems, Business Organisation, IT Project Management, Systems	280 UCAS Points (or equivalent) Grade C or above in English and Maths GCSE Experience in or an interest in IT	Opportunity to attend lectures Specialisation with a dissertation project Modules match placements	BSc (Hons) Digital & Technology Solutions

			company laptop and mobile phone	Development, Big Data & Computer and Network Infrastructure & Cyber Security			
Jaguar Land Rover	2 yrs	UK	Tuition paid, holiday allowance, gyms and sporting facilities, salary increasing every 6 months	*Engineering:* Advanced Manufacturing Engineering, Body Engineering, Vehicle Operations, Powertrain Engineering, Supplier Technical Assistance (STA), Research, Product Engineering Operations, Electrical, Chassis, Cost Engineering, Design, Vehicle Engineering, Powertrain Operations *Finance and accountancy:* Accounts payable, Marketing sales and service, Finance, Business assurance, Supplier risk and tax	*Engineering:* Maths and English GCSE C Grade or above or Grade 4-9, 3 x GCSEs (or equivalent) including Science, Engineering or Technology at C Grade or above, OR Engineering Vocational qualification Level 3 of 90 credit value (540 GLH), 2 x A Levels (or academic equivalent) including Maths and additional, Mathematical/ Physics/ Chemistry/ Technology or Engineering subject C Grade or above, OR A Level Maths at C Grade or above plus an Engineering Level 3 qualification of 120 credit value (720 GLH) *Finance and accountancy*: 5 x GCSEs C Grade or above including Maths and English or equivalent, 300 UCAS from three A levels, must include a B Grade in a numerical or business subject	1st yr: college learning fundamentals, and working at a facility 2nd yr: study a full degree	*Engineering:* Level 2 Diploma in Manufacturing Engineering (Foundation Competence), Level 3 Diploma in Advanced Manufacturing Engineering (Route specific), Level 3 Advanced Manufacturing Engineering (Development Knowledge), BEng (Hons) Degree in Applied Engineering *Finance and accountancy:* Certificate Level of the CIMA qualification, possibility to become fully qualified CIMA Chartered Accountant, BSc Accounting and Finance
KMPG	3-6 yrs depending on program	UK	Study leave, otherwise unspecified	Accounting	*Digital:* 5 x GCSEs at A* – C or at 4 – 9 GCSE (including English Language and Maths), minimum of 104 UCAS points under the new UCAS tariff points systems *Business Services:* 5 x GCSEs at A* – C or at 4 – 9 (including English, Maths and ideally ICT)	*Digital:* 1st yr: induction, company rotation 2nd -4th yr: specialisation *Business Services:* Unspecified	*Digital*: BSc degree in Digital and Technology Solutions *Business Service*: Level 3 Advanced NVQ qualification in Business Administration
Renishaw	3-5 yrs depending on program	UK	Technological environment, gym facilities, salary,	Engineering, Software, Embedded Electronic	*Engineering: Technical and Manufacturing:* PEO at level 2	*Engineering*: *Technical and Manufacturing:*1st yr: full-time study	*Engineering (both streams)*: first step in becoming a qualified engineer

			pension, private medical insurance	Systems Design & Development Engineering	Minimum 5 x GCSEs, including a level 5 or a B in Maths, a C in Science, and a level 4 or C in English. A current or recent job *General engineering also requires:* Be in the first year of a BTEC level 3 in Mechanical or Electrical/Electronic Engineering *Software*: Either three A levels at AAB, with at least one in either Maths or Physics, and a second in a Computer Science related subject; *or* a BTEC Level 3 Extended Diploma at DDD, in a Computer Science related subject *Embedded Electronic Systems Design & Development Engineering*: Three A levels, must include Maths, can include two of the following subjects: Computing/Computer Science; Design and Technology; Electronics; Engineering; ICT; Further Maths Minimum of 120 UCAS points (in the new tariff system) which equates to BBB	2-3rd yrs: on-site placements (6-month rotations) *General engineering*: 1st year: already spent a year at college undertaking a PEO Level 2, part time study, work placements 2-3rd years: work placements, part time Post-apprenticeship study available *Software*: 1st: training programme, 2-3rd years: work placements 4th yr: specialisation *Embedded Electronic Systems Design & Development Engineering*: 1st yr: divided between university, attending the Renishaw Academy, and training 2nd – 3rd yrs: work 4th – 5th yrs: specialisation	*Software*: BSc in Digital and Technology Solutions *Embedded Electronic Systems Design & Development Engineering*: BEng in Electronic and Computer Engineering
Siemens **NOTE: this company also appears in the European table with a different scheme**	2-4 yrs depending on pathway	UK	Tuition paid, salary, otherwise unspecified	Engineering, Business Administration, Finance	*Advanced apprenticeship*: a minimum of 4 x GCSEs or equivalent at grade C or above including Maths, English, Science *Higher apprenticeship:* should have a BTEC National Certificate or A Levels in relevant disciplines.	*Advanced apprenticeship:* 1st yr: full time study 2-4th yrs: practical training *Higher apprenticeship:* unspecified combination of studying and practical training	*Advanced apprenticeship:* NVQ Level 3 in an engineering discipline, plus a technical engineering qualification *Higher apprenticeship:* Level 4 qualifications – an NVQ and a relevant HNC
UK Government Civil Service	2 yrs	UK	Study leave, salary, otherwise unspecified	Business management, Procurement and supply, Financial management, Network engineering, data analysis, software development	5 x GCSEs at grade C and above, or the new grade 4 and above, including English Language and Maths, or equivalent *Digital and technology also requires:* 2 x A levels, at grade C and above, preferably in Science, Technology, Engineering and Mathematics (STEM)	Mainly a blended approach to learning, with a combination of facilitated learning in workshops, digital delivery and one-to-one coaching support	*Business*: Level 4 Diploma in Business and Professional Administration, NVQ Diploma in Business and Administration *Commercial:* Level 4 Diploma with the Chartered Institute of Procurement & Supply *Digital and technology:* Level 4 apprenticeship certificate *Finance*: Level 4 professional accountant and taxation technician standard.

VISA international	1-4 yrs depending on pathway	UK	Opportunity to earn further professional qualifications based on placements, including the International Software Testing Qualifications Board (ISTQB), Information Technology Infrastructure Library (ITIL) and more, role rotation, study leave, buddy/mentor	Digital & Technology Solutions, Chartered Management, Finance	*Digital & Technology Solutions:* minimum 3 x A-levels at Grade B or above, including Maths, Science or Computing, 7 x GCSEs at Grade C or above (or equivalent) including Maths and English Language *Chartered Management*: minimum 2 x A-levels at Grade B or above, 7 x GCSEs at Grade C or above (or equivalent) including Maths and English Language *Finance:* minimum of 2 x A-levels at Grade A* to C (or equivalent), ideally including Maths, 5 x GCSEs at Grade C and above (or equivalent) which includes English, Maths and Science	*Digital & Technology Solutions AND the Chartered Management* 1st-2nd yr: 6-month rotations 3rd-4th yrs: specialisation, placements around UK *Finance:* 1 yr program: rotation through a variety of roles in Accounts Payable, Expenses, Cash management, Billing, Management accounting and financial reporting, opportunity to progress on to the professional qualification	BSc Hons degree Chartered Institute of Management Accounting (CIMA) Certificate qualification

http://www.baesystems.com/en/careers/careers-in-the-UK/apprenticeships
https://joinus.barclays/emea/apprenticeships/higher-apprenticeships/
https://www2.deloitte.com/UK/en/pages/careers/articles/brightstart-business-apprenticeship-scheme.html
http://www.fujitsu.com/UK/about/local/jobs/graduates/apprenticeships/about/index.html
http://www.jaguarlandrovercareers.com/jlr-roles/future-talent/apprentices/
https://www.kpmgcareers.co.UK/apprenticeships
http://www.renishaw.com/en/apprenticeships--6876
https://www.siemens.com/UK/en/home/company/jobs/search-careers/apprenticeships.html
https://www.gov.UK/government/organisations/civil-service-fast-track-apprenticeship
https://www.visaeurope.com/about-us/apprenticeships/

Table 3 European program samples

Organisation	Length	Based in	Benefits	Subjects	Requirements	Curriculum	Qualifications
Adidas – Dual Study	3-3.5 yrs depending on program	Germany	Above average wage with incremental increases each year, 28 days annual leave, continued employment after the apprenticeship, help finding accommodation	Finance, Business, Management, Marketing	Good general or subject-specific university entrance diploma	*Bachelor of Arts International Business*: Theoretical: 1 semester college, 1 day a week work environment, one semester abroad, thesis Practical: in work environment during semester break, 20 weeks at European location *Curriculum for all others:* Theoretical: 3 months each semester, one semester abroad, final exam Practical: 3 months each semester, one assignment abroad, 3-month thesis	Bachelor of Arts in Management in Commerce Bachelor of Arts in RSW Accounting & Controlling Bachelor of Arts in Taxes and Auditing Bachelor of Arts in Industry 4.0 Bachelor of Arts in Human Resources Management Bachelor of Arts in Dialogue & Online Marketing Bachelor of Science in Business Information Systems Bachelor of Arts International Business
Airbus	1-5 yrs depending on program	France, Germany, Spain, UK	France, Germany and Spain – unspecified UK - 25 days annual leave, pension, company sharing bonus, awards, company share purchase schemes	Engineering	Enrolment in a partner college or institute is a common requirement	Unspecified	*France:* certified professional qualification *UK:* Engineering degree apprenticeship (commercial aircraft), Digital & technology solutions degree apprenticeship (commercial aircraft) *Germany and Spain:* - unspecified
Daimler – Dual Study	3 yrs	Germany, some opportunities to work/study abroad	Salary, small lectures and direct contact with professors	*Technical:* Electrical engineering, Computer sciences, Mechanical engineering, Mechatronics, Industrial engineering *Business:* Banking, Digital business management, commerce, industry,	Unspecified, however, academic grades are specified as one of several selection criteria	6 semesters, each of which comprises 3 months of theory and three months of work experience	Bachelor's degree

				international business administration and management, transportation and logistics, insurance, business informatics			
Infineon – Dual Study	3-4 yrs depending on program	Various	Monthly wage, otherwise unspecified	Industrial business studies, Electrical engineering, Electrical and information technologies, Information technology, Mechanical engineering, Mechatronics, Microsystems technology, Business Informatics	Unspecified	Theoretical and practical phases of training alternate in a fixed rhythm.	Bachelor of Arts (B.A.) Bachelor of Engineering (B.Eng.) Bachelor of Science (B.Sc.)
PERI Group – Dual Study	Unspecified	Various	Monthly wage, possibility to do an internship in one of our many subsidiaries worldwide, otherwise unspecified	Building trade-project management, Business administration with a focus on industry, international business, forwarding, transport and logistics, International Management for Business and Information Technology (IMBIT), Mechanical engineering according to the “Ulm Model”	Unspecified	Unspecified combination of theoretical knowledge at university and practical work experience at the company	Unspecified, dual bachelor study programs

Siemens **NOTE: this company also appears in the UK table with specified Advanced and Higher Apprenticeships**	3.5 yrs	Germany	Accommodation, bank account, language lessons, flights home, mentor, salary increases each year, 30 days annual leave, utilities paid	Mechatronics, Electrical/Electronic Engineering	Unspecified	Unspecified combination of theory and practice between company and a VET training school	Unspecified

https://careers.adidas-group.com/teams/future-talents/dual-study-program?locale=en

http://company.airbus.com/careers/apprentices-and-pupils.html

https://www.daimler.com/career/pupils/dual-study/

https://www.infineon.com/cms/en/careers/pupils/dual-study-programs/

https://www.peri.com/en/career/pupils/dual-study-program.html

https://www.siemens.com/global/en/home/company/jobs/search-careers/europeans-at-siemens.html

Table 4 Other program samples

Organisation	Length	Based in	Benefits	Subjects	Requirements	Curriculum	Qualifications
BMS – Scholars Program	2 yrs	US	Tuition paid, wage, possible ongoing employment.	Automotive, Production, Equipment services, Logistics	Minimum 2.8 cumulative GPA, full-time student status (12 credit hours), enrolled in a participating technical college in a related manufacturing degree, entering first or second semester of study, successful completion of BMW assessment testing.	Unspecified flexible program, ½ day classes, ½ day of work	Associate degree
Georgia's Youth Apprenticeship Program	Unspecified	US	Unspecified	Architecture and construction, Arts, A/V Technology and Communications, Business management and administration, Education and training, Energy, Finance, Government and public administration, Health sciences, Hospitality and tourism, Human services, Information technology, Law, public safety, corrections and security, Manufacturing, Marketing, Science, Technology, Engineering and mathematics, Transportation, distribution and logistics	Be in grades 11 or 12 and at least 16 years old and in good academic standing, otherwise unspecified	Individualized training plan, job placement OR part-time job, work-based learning placement also part of academic course,	High school diploma, a post-secondary certificate or degree, certification of industry-recognized competencies
Ivy Tech Apprenticeships Initiative	2 yrs	US	Wage, otherwise unspecified	Mainly technical and trades	Unspecified	Combination of on-the-job-training and general education classes	USDOL - Office of Apprenticeship certificate, an Associate of Applied Science (AAS) degree

MAT2 – Michigan Advanced Technician Training Program	3 yrs	US	Tuition paid, school-period stipends, hourly wage for work, 2 yrs work after training	Mechatronics, Technical product design, Information technology, and computer Numerical Control (CNC)	Unspecified	Combination of community college and work periods at the work site	Associate degree, DOL Registered Apprenticeship Certificate of Completion, German DIHK-issued certificate
SkillsFuture Work-Study Degree Programs	Various	Singapore	Possibly - tuition paid, stipends and sign on bonus, ongoing employment.	Engineering, Hospitality, ITC – security or software engineering, Finance, Business	Polytechnic Diploma, or GCE 'A' Level holder, a letter of support from sponsoring company	*Delivered in either of two modes:* Term-in/Term-out: students alternate between spending one to two terms (or trimesters) in university and at the workplace; OR 4-day Work/1-day Study or 3-day Work/2-day Study: students alternate between working three or four days in the partner company and studying in university for the remaining one or two days each week.	Bachelor of Hospitality Business with Honours Bachelor of Information and Communications Technology with Honours – Information Security Bachelor of Information and Communications Technology with Honours – Software Engineering Bachelor of Engineering with Honours in Electrical Power Engineering Bachelor of Engineering with Honours in Civil Engineering Bachelor of Science in Finance with Minor Bachelor of Science in Business Analytics with Minor

http://gvltec.edu/BMW-scholars/

https://www.bmwusfactory.com/wp-content/uploads/2014/04/2014-scholar-brochure_041114.pdf

http://gawbl.org/about

http://workforce.resa.net/wp-content/uploads/sites/8/2017/03/Workforce_Mat2_2017.pdf

http://www.skillsfuture.sg/workstudydegree

https://www.singaporetech.edu.sg/skillsfuture/work-study-degree-programmes

Industry forum summary

Summary – emergent themes

What are they? What are they called?

A need was identified to clearly define and gain a shared understanding of higher apprenticeship approaches and the outcomes being sought. Terminology and branding are important and will require careful consideration to both promote higher-level skill development as well as protect the existing strengths of the apprentice brand.

A need for flexibility

The purpose and approach for higher apprenticeships, if desired at all, will vary between industries and approaches and need flexibility to accommodate the different needs. Each industry will need to identify their requirements and drive the content and approach, whilst accounting for a range of differing employers.

Clear pathways with many entrance and exit points

Participants suggested it is important to have clear and well promoted pathways to vocations with the capacity to do study in ‘chunks’ depending on the stage of participant’s work journey (new and existing workers) and time available.

Vocation not just education

Apprenticeships need clear ties to particular job roles and should be based on identified industry needs. However, jobs and qualifications can be considered part of broader vocational/career streams to facilitate career progression and mobility. Proliferation of qualifications with limited industry use has occurred previously and should be guarded against.

Working together

There are multiple challenges regarding effective and consistent engagement of industry with both VET and higher education, including the tailoring and regular review of appropriate training packages. These may be more challenging for higher apprenticeships but is considered critical for their success, particularly in the context of authentic work-based learning and assessment. Merging vocational and academic approaches was identified as a challenge.

Challenges to existing apprenticeships remain

There is still a need to maintain a focus on current challenges to existing apprenticeships. These challenges are likely to also apply to higher apprenticeships.

Funding drives behaviour

Funding approaches need broader review and careful consideration as funding models may drive poor behaviour and negatively impact on quality. The willingness of employers to contribute to training costs was unclear.

Background

The National Centre for Vocational Education Research (NCVER) convened a forum of Industry Reference Committees whom had previously expressed a willingness to the Australian Government Department of Education and Training to be involved in research regarding apprenticeships. Representatives of the Skills Service Organisation whom provide support to these Industry Reference Committees were also in attendance. Thirteen Industry Reference Committees and nine Skills Service Organisations were represented.

Participants were organised into four tables and discussed topics under four broad headings over the course of the session:

- Industry demand for higher apprenticeships
- Recruitment of higher apprentices
- Quality delivery and outcomes
- System support and interactions.

Each topic was then discussed more broadly amongst attendees as a whole. To facilitate broader discussion there was some movement of participants to different tables during the session. Each table had an NCVER staff member present to take notes.

Post forum, NCVER has compiled the diverse feedback and notes taken by varied staff and presented them below in themes under the broad headings used on the day. This includes all feedback from each table which may not necessarily have been discussed with the broader group.

Some feedback is related to existing apprenticeships (rather than higher apprenticeships) or to training more generally. This reflects the knowledge and experience of the forum participants. These issues may be relevant to, or even more critical for, higher apprenticeships.

Industry demand for higher apprenticeships

Demand

There were some difficulties in expressing the perceived level of demand without a shared definition of what higher apprenticeships are. There was an identified gap in training between the certificate III/IV and degree level qualifications for many industries; both in developing para-professional roles and structured, contextualised, practical learning pathways for management, leadership and supervisory skills. Employers may need new skills or new roles for their staff/organisation so may want solutions targeting school leavers, entry and mid-career workers. The concept may be more attractive to, and therefore have more significant demand from, larger firms. In understanding demand the system also needs to identify multiple pathways along an occupational/industry continuum, discussed more below. Matching demand and opportunity may be challenge. Higher apprenticeships can be seen as a workforce supply model; how to build workforce capability through workforce systems.

Conversely, whilst there will always be a demand for new skills and skills deepening this may not necessarily be delivered through higher apprenticeships. There was the query of what problem higher apprenticeships are trying to solve. Some tables discussed needing to ensure the focus is not on the qualification but what the workplace requires and to then determine a qualification and if this is suitable for an apprenticeship. Many industries already have higher-level qualifications available, but they are

perhaps not being accessed through an apprenticeship model. Potentially increased complexity in managing higher apprenticeships with the demands of work may mean they are not appropriate for every industry, occupation and circumstance. For highly regulated occupations higher apprenticeships may be more difficult or not appropriate. What are the benefits for industry to support higher apprenticeships when often the skills may be gained through other means, including work-based training? There may be additional difficulties for smaller businesses, particularly through employment-based arrangements if the project the apprentice is working on may not last the length of the apprenticeship.

Upcoming government targets regarding the number of apprenticeships may change supply and demand. Additionally, some industries may need higher qualifications as part of tender applications which will likely drive demand. However, perceptions of 'apprenticeship', discussed more below, may act as a blocker for demand.

Characteristics of higher apprenticeships

Some discussion focused on the need to ensure a clear tie with the concept of a 'vocation': an obvious link between the qualification and a job. Broader career progression and mobility was repeatedly raised with the promotion of ideas of vocational streams; describing varied roles all within an overarching discipline. Health care provides a good example of this concept, with different touch points along the stream requiring different qualifications yet all within a continuum of care provision (for example, assistant nurse at certificate III, enrolled nurse at diploma and registered nurse at degree level). Some examples or suggestions were provided describing lower level qualifications being more focused on core knowledge/skills in a particular vocational stream and higher-levels providing more opportunities for specialisation. There was a need to ensure appropriate pathways to applied learning of skill sets, even at higher-level qualifications. For higher apprenticeships providing leadership or management skills, it may be more appropriate to recruit from within a business.

The potential for the proliferation of qualifications was raised as a concern and has been seen as being typical in higher education. The willingness of worksites to take on new qualifications and existing regulatory and industrial frameworks will impact on what is possible.

Funding was repeatedly raised as an issue and there was a clearly expressed need to carefully consider exactly how funding models would drive behaviour. The focus should be what training was actually needed by industry. Who would pay for higher-level training was queried. Staff or skill shortages were potential drivers; however, it was discussed that employers may want incentives. Some concerns were raised about the potential of creating false training markets. Potential difficulties in employers investing in apprenticeship training were raised, particularly if the duration and costs are greater for higher apprenticeships.

Throughout the forum there was continued reference to apprentices (including potential higher apprentices) needing to prove competence in the context of actual work; performing whilst exposed to the genuine distractions and broader demands of a business. This also helps ensure industry currency. This may impact on employability with employers currently demanding more pre-requisite experience.

A consistent theme was the requirement for apprentices to be exposed to a broad range of activities (and potentially work sites) to accommodate for likely future work demands. Often this cannot be accommodated for by an employer, particularly at higher-levels. This may be particularly true for small to medium enterprises and there may be issues or risks associated with inexperienced staff and problems offering suitable placements due to high workloads. Group Training services were repeatedly discussed as a possible way to accommodate for more complex training plans and ensuring the required depth and

breadth of knowledge/experience. This can raise issues of insurance and risk management which may need further exploration to better facilitate this approach. One participant raised a need to ensure 'bad apples' were effectively dealt with to prevent employers withdrawing from group training arrangements due to bad experiences.

There was general feedback on retaining the contract of training as a core component of apprenticeships. However, some forum participants suggested the contract may act as a barrier, evoking industrial relations issues and limiting flexibility. This participant raised the notion of some higher apprenticeships potentially being under a contract of training and others involving more work placed learning components.

Importantly, there was a clear desire from some industries to ensure that higher apprenticeships did not detract from, or modify, the core components of apprenticeships (employment based, aligned with an identified vocation, high quality integrated on and off job training with a clear and unambiguous training plan) and that some focus be given to addressing existing challenges with apprenticeships first. Higher apprenticeships were also framed as an opportunity to potentially separate from the traditional approach and try 'new things' whilst drawing on strengths of existing apprenticeships.

Recruitment of higher apprenticeships

Recruitment

The inherent appeal and associated rewards of industries will differ and recruiting to less enticing industries is challenging. Changing parental and other influencers' perceptions as to the appeal of apprenticeships is challenging even in areas such as automotive which already provide high-level training. There is limited current industry and job information available. Explaining real pathways and articulation arrangements is critical. There is a need to engage students and their influencers with what modern industry actually look likes to dispel old fashioned inherited ideas, especially as secondary education is dominated by tertiary educated workers. Having clear career progression pathways beyond the immediate apprenticeship and trade may help convince parents this is a good pathway for their children. Need to change perceptions at a variety of levels (for example, students, parents, and schools) away from a purely academic path.

Clear entrance and exit points along particular career paths were seen as critical for apprenticeships more generally and this may also broaden the appeal of higher apprenticeships. For example, one could start at certificate level with a qualification and an associated job role and study higher-level qualifications later if desired. Alternatively, others may start at the higher-level; emphasising a focus on 'career' not just a 'high' or 'low' path. Flexibility can increase the appeal of vocational training. Awareness of these diverse pathways and the opportunities they present needs promoting and may help to improve the attraction in a culture that values higher education above VET. For smaller enterprises the option of available higher-level qualifications may be useful in aiding staff retention. However, there is a need to ensure the actual job positions are there to be filled. Additionally, funding may potentially be a barrier to participation.

Good examples of recruitment practice were provided in the aviation industry with multiple rounds of assessment prior to offering a role. Regular monitoring and reviews of learning and performance during the apprenticeships and having good connections were resulting in high completion rates of quality apprentices. Some industries and employers are not as highly structured which makes this approach more difficult. Others mentioned behavioural assessment as to what industry would suit students may be

beneficial. Vetting is likely enhanced when there are well defined job profiles which is not always the case and job advertisements may not accurately reflect the actual job role. There were reported challenges with school level competencies, particularly in English and mathematics. Use of pre-apprenticeships may vary between industries but, when discussed on one of the tables, were not seen as typical. Some industries may not have cultures of supporting apprenticeships, particularly at higher-levels, which may require instituting targeted culture change initiatives.

There may be challenges in recruitment of both apprentices and employers in regional areas. Group training approaches may help with this.

Retention is a perennial issue and there is wastage in the system. Mentoring and ensuring ongoing connection with apprentices, potentially in a pastoral care sense, were discussed as being useful in retention.

Apprentice characteristics

The consensus was that the attributes employers were recruiting on were typically employability or work-readiness skills: good communication, willingness to learn and work, team work and previous work performance. In community services, a response to staffing level issues were summarised as ‘qualities not qualifications’ being the driving factor, wanting people with good communication and social skills to transition into care-based roles. Related to this there was an expressed need to ensure there are pathways into careers and training for those from a range of differing backgrounds.

Terminology

There were differing views about use of terminology. Some suggested use of the term ‘apprenticeship’ with its traditional trade-based brand associations might be off-putting and they would prefer alternatives such as ‘cadetships’. A concern was also raised regarding whether ‘higher apprenticeships’ could dilute or position as ‘lesser’ the brand of current apprenticeships.

Others argued use of the term ‘higher apprenticeships’ could act as a vehicle to shift negative or narrow perceptions about apprenticeships. By encouraging a more prestigious image this may raise the appeal to parents and potential candidates. This notion of prestige may be supported by more vetting of recruits and a greater sense of selectivity. There may be a need to change varied understandings of ‘higher apprenticeships’ amongst different groups.

Quality delivery and outcomes

There were repeated statements that what was happening in education was out of touch with what was happening in industry. Participants suggested that innovation and change in the job and workplace should drive modification of the training, rather than the reverse. Revolutionary change may not be required, but the cycle of review and renewal of training packages needs to be hastened so there is not an overly long lag. In some industries there is a lot of regulation and negotiating these in multiple jurisdictions can result in long delays in modifying training packages. The importance of listening to industry, employers and staff and tailoring programs to their requirements was emphasised. There may be issues where assessment and capstones have not been modified. An example that was provided was where 80% of a capstone test was domestic electrical work which was not part of their apprentice’s training. While more fast-changing training packages were considered appropriate a cautionary note was raised that if packages change too quickly the education system can’t keep up so a balance is required.

Current training contracts and training plans were discussed and there was one view that these would be fit for purpose for higher apprenticeships but might be more complex to settle and monitor as they would need to reflect higher-level requirements. Another view was that training contracts could be too limiting for higher apprenticeships.

On the job training

Quality of on the job training is critical to successful outcomes and simulated work environments were described as not always successful.

Group training approaches to provide broader workplace exposure was helpful in ensuring quality though there are attendant legal issues regarding supervision and who bears insurance risks, for example. Feedback was provided saying on-site education was also preferred by the apprentice, potentially aiding engagement with learning and retention in the apprenticeship.

Employers were described as needing to be part of any quality initiatives. The importance of their role in ensuring capacity to deliver good on the job training, understanding the training system and tailoring training packages was emphasised. Education may be required for workplaces to understand their requirements, obligations and roles and responsibilities in training. This extends beyond simple to work tasks to active teaching. Training of on-the-job supervisors could potentially occur in parallel with that of apprentices.

Training providers

There was considerable discussion about the quality and responsiveness of RTOs and a consistent view that funding models can drive poor quality behaviour, delivery and assessment. There was some discussion on RTOs who have proliferated in boom times and delivered poor quality training. Who is responsible for assessing the quality of training delivery and how? Points raised included the potential for increased oversight and assessment of RTOs by examining the quality of what is being delivered and encouraging to go beyond just ‘delivering the basics’. This may be more of an issue for higher-level qualifications and the two regulators that may be involved (ASQA and TEQSA).

In addition to competency of the training provided, culture change was discussed as being required in RTOs who, while having some clear examples to the contrary, were reported as sometimes being quite inflexible, for example, by wanting to deliver standard offerings where the employer needs negotiation regarding both content and on the job delivery requirements. Increased collaboration between trainers and employers was discussed, with a desire for more on-site assessment and sign off. Culture within RTO’s may vary markedly as to their willingness to collaborate. Employers may benefit from information regarding the intended flexibility in the system and their capacity to negotiate tailoring and change although others pointed out that in thin markets this is not always possible. It was suggested that quality is less an issue in situations where employers and RTOs work closely together, and examples were provided of bringing RTO lecturers onto worksites to help inform their practice. Concerns of getting delivery into the workplace from university providers were raised for higher apprenticeships.

Participants demonstrated limited confidence in the training system and raised doubt regarding the appropriateness of the Certificate IV in Training and Assessment as evidence of competence to effectively train. However, it was noted that this could potentially be retained in contexts where industry experts are enabled to engage with the training system. There is a need for appropriately experienced assessors and those with genuine and current experience in the industry and typical commercial scenarios. Training in general may require higher standards and teaching qualifications and

more workplace assessments to ensure it is appropriately authentic. It was acknowledged that casualisation of the TAFE workforce may also have impacted on quality. The potential of independent external assessment was also raised.

A workforce pipeline to recruit trainers from industry to enable the current system to work more effectively was discussed. This may be appealing to older, highly experienced workers who could bring a wealth of knowledge to apprenticeship training. There were concerns about the aging workforce in education and a lack of replacements coming through the system.

Doubt was expressed by the forum participants regarding the quality of training where competencies are not taught on the worksite. An example of industry mentors in the automotive industry was provided with mentors 'signing off', so industry makes the final determination of whether someone is truly competent on the job.

Funding for training may still be based on hours even though it is a competency-based system and there are differences between jurisdictions. This has resulted in some RTO's not modifying their training as requested as this would require more hours than they are funded to provide; constraining the system to respond to industry need. Funding arrangements may also be impacting on quality as providers may be paid 50% to 100% of their fee upon completion. Hence, there may be incentive to falsely certify an apprentice as competent.

Brokerage services between employers and trainers were described as being potentially helpful, provided that appropriate protections were in place regarding commercial conflicts and exploitation. These may also facilitate the group training issues discussed above for moving apprentices between different sites to gain broader experience. Brokerage has been described as useful in the current Price Waterhouse Cooper trials in helping negotiate RTO modification of standard offerings and associated costs.

The potentially greater interaction required between the VET and higher education sectors may require bridging vocational and academic approaches to facilitate quality. Concerns were raised as to the general capacity of most universities to adequately teach in a vocational manner, being more researchers who teach as opposed to educators.

Assessment

Assessment was not discussed in detail though it was stated that the standard of delivery and assessment needed to be strong, industry endorsed and ultimately focused on whether the apprentice is capable or not. It was mentioned that assessments for higher apprenticeships could be more or less the same as for current apprenticeships although there was mention of needing to update and tailor prescribed assessment tasks. The England example of introducing performance grades for apprenticeships was raised as potentially encouraging quality.

Funding

There were requests to review the basic structure of the funding and training system with apprenticeships being highly demand driven which may hide actual workforce need. Noting again, there were strongly expressed concerns as to how funding models may drive poor behaviour. It is unclear if employers will actually pay for training and higher apprenticeships, yet this investment may result in better informing training and development and commitment to facilitating quality. A suggestion was provided regarding funding on job outcomes rather than volume of training and to consider its impact on the training system.

Currently funding can be provided for any qualification, but these may be products that are not aligned with industry need. There is some confusion in the market place as the same training package can be funded differently if it's an apprenticeship or traineeship. High demand for a qualification and skills shortages may perversely drive poorer quality, particularly in industries more vulnerable to boom and boost cycles. As discussed, training providers being paid upon sign off of competence may also drive poor quality. There were also reports of differing jurisdictional regulations on what level of training students can be supported to study.

Related to funding was an issue of considering the return on investment for governments from supporting different levels of qualifications. Research was described saying the return on investment of higher-level qualifications tended more to benefit the individual than the supporting government. This may differ between industries.

System support and interactions

The challenges of negotiating different governance, regulatory and performance models in VET and higher education (self-accrediting) were acknowledged and this is an area likely requiring explicit examination and intervention for higher apprenticeship programs to be effectively vocational, practical and tailored.

There are existing tensions and competition between HE and VET institutions for funding and students. There was a concern that higher apprenticeships might encourage another division in education; higher education versus VET and higher versus lower apprentices. There is a need to focus on pathways and career progression. An example was provided of cadetship models in nursing being highly effective and leading to good recruitment outcomes. However, it was reported that universities did not like this approach as it was making them look poorer in comparison. Participants indicated that there are examples of TAFE and higher education articulation, for example in civil construction and infrastructure. These articulation pathways are seen as beneficial for the system as a whole but this approach is not systemic. This aligns with earlier discussions regarding vocations and career streams and facilitating diverse pathways and roles in a broader career. This focus was discussed as potentially helping ease tension between the sectors.

Difficulties with training providers effectively engaging with industry were seen as being more typical and intransigent with universities. Some good examples of community and industry engagement from universities were provided with better alignment with the local labour force and employment needs, but it was suggested that these tended to occur in smaller institutions and those in regional areas. Examples provided included the University of Tasmania owning two RTOs and the South Queensland institute of TAFE developing a wine centre with a university, with the university teaching chemistry and TAFE the other aspects of wine production. However, effective university and industry links were not seen as typical. Ensuring industry influence in training packages and the approach to training delivery were seen as critical. This delivery should involve worksites as in-house delivery was described as not matching what occurs in specific workplaces. Additionally, current approaches to work integrated learning through universities were described as potentially lacking application and practise. Training delivery location was described as a key sticking point in developing effective training links between industry and training providers.

Examples were raised of industry driving this engagement by developing their own new courses when they were unhappy with what was on offer. Some have developed their own RTOs to control structure and currency of learning, however, this can be a financial drain. However, other examples of close

interaction between industry and training providers resulted in the training provider expanding their facilities. Public RTOs as opposed to enterprise RTOs may need to demonstrate closer collaboration to show industry currency.

Re-emphasising the points mentioned above, teaching style was seen as highly important and concerns were raised with academics potentially not making the best teachers. Academics modifying their approach to an apprenticeship model may be difficult. Being able to encourage academics into the workforce and vice versa was raised as a possible initiative to combat this. Others discussed examples of 'sandwich' schemes, for example, the Sydney Institute alternating training with six-month blocks of on- and off-the-job. Additionally, universities are self-accrediting, and it was suggested they may not be connected to the world of work, licensing requirements, mandated standards and the industrial relations environment.

A volume issue was raised where specialised training may not be delivered by an RTO if the volume is too low to justify it for that provider. This may be a particular concern for regional areas. Some roles potentially serviced by higher apprenticeships may be critical (eg management) but numbers might be low, so some participants questioned whether funding might be available to support promotion of training in these cases.

Reflecting back on comments regarding increased marketing and information dissemination of VET, challenges in schools were raised, particularly career advisors and VET coordinators, who may channel certain types of people to VET and apprenticeships.

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