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DIRECTORATE OF VOCATIONAL EDUCATION AND TRAINING

Upskilling the Logistics Workforce in the Digitisation Era Industry-VET engagement, inclusion and Digitisation

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Introduction

Australia has a strong and robust formal economy. Australia's industry outputs commenced with wealth from extracting vast loads of Gold in the 1880s, to agriculture through the early twentieth century, manufacturing in the mid to late -twentieth century and strong exports of resources in the last half-century. Along with other nations, Australia has a very strong service-based economy. Australia's industry structure and employment is reflected in the table below[1]. It shows Industry sectors of the Australian between goods and services, and covers transport and warehousing.

Table 1: Industry Segments in Australia – Goods and Services

Goods industries

Industry	*Category*	*Employment ('000)*	*Value added ($'000 000)*
Mining	Goods	247	202 441
Manufacturing	Goods	862	108 404
Agriculture, forestry and fishing	Goods	363	38 132

Service industries

Industry	*Category*	*Employment ('000)*	*Value added ($'000 000)*
Transport, postal and warehousing	Distribution	610	84 144
Information media and telecommunications	Distribution	194	43 403
Retail trade	Distribution	1 244	79 171
Wholesale trade	Distribution	395	70 860
Professional, scientific and technical services	Business	1 114	136 736
Financial and insurance services	Business	489	167 057
Rental, hiring and real estate services	Business	228	54 802
Administrative and support services	Business	395	63 430
Accommodation and food services	Personal	773	39 405
Arts and recreation services	Personal	202	14 810
Other services	Personal	439	32 394
Electricity, gas, water and waste services	Utilities & construction	151	47 204
Construction	Utilities & construction	1 160	137 673
Education and training	Non-market	1 085	93 678
Public administration and safety	Non-market	884	106 521
Health care and social assistance	Non-market	1 765	144 023

Source(s): The Economist (2020); European Commission et al.(2009); ABS (*Australian System of National Accounts, 2019-20*, Cat. no. 5204, table 5; *Labour Force, Australia*, Cat no. 6291.0.55.001, table 4).

Since European settlement of Australia it has relied on trade of goods, and more recently its services (such as international education), for prosperity. Following periods of tariff protection of Australian industrial and agriculture exports, from the early 1980s Australia has removed many of its tariffs and is a strong signatory to the GATT – The General Agreement on Tariffs and Trade. This has exposed many traditional industries to global price competition, and most high-volume production of goods

[1] Productivity Commission of Australia - https://www.pc.gov.au/ongoing/productivity-insights/services/productivity-insights-2021-services.pdf

has been replaced by bespoke and specialised manufacture, to support local industries such as mining and major infrastructure and into global supply chains.
In this context, in the mid-1980 and early 1990s, Australia embarked on a significant expansion of vocational education to ensure any large-scale disruption for workers in industries from open trade were minimised. It also aimed for Australia to have a strong means of recognising formal skills across a large proportion of occupations to support mobility of workers within and between industry sectors. Vocational education was also strengthened to ensure skills for workers were kept up to date with advances in production and service processes and techniques. This gave rise to competency-based system in Australia, which operates to this day.

Competency-based vocational education in Australia

Competency-based vocational education is common in many countries, principally in Europe. Competence, broadly refers to the ability to perform a function in a work setting taking account of the different settings and context for fulfilling that function. For example, a production worker operates within a well-established structure and must be able to follow process and quality control and safety measures, whereas an assistant nurse must be able to fulfil functions for patients presenting with different conditions and behaviours. A designer, on the other hand, must have creativity but be able to take account of the settings in which the design must work.
Competency, in education terms, refers to the outcomes of a learning process. In Australia, this outcomes education model and competence for functioning in an occupation have been combined – the basis of competency-based vocational education and training. In this regard Australia is unique in its model.
There are also broader policies that governments seek from competency based vocational education and training:

- It is open access, regardless of lack of previous learning
- It is a model based on capability to perform the function, not to complete an exam
- It is standards based – which sets a minimum for performance, but also allows for a range of approaches for delivery of the skills training
- Acquiring the skills and credit does not depend on attending an institution for the learning, **but** can include that (especially as an institution it has the expertise and capability for training)
- They form part of the Australian Qualifications Framework (AQF) so the qualification (or recognition of skills) shows relevance to other occupations, signals to employers the scope and level of skills and learning and, importantly, communicates to society the level of achievement.

Industry Engagement Arrangements in Australia

The Australian vocational education and training system has a strong heritage, since the mid-1980s, on industry engagement in setting skills standards and input to the operation of vocational education delivery.
Australia has recently strengthened industry engagement through ten (10) Skills and Jobs Councils. They are being established during 2023. They cover all segments of the economy. See https://www.dewr.gov.au/skills-reform/jobs-and-skills-councils for further information.

Founded on tri-partite principles

The JSCs and the broad approach to vocational education and training in Australia are based on tri-partite principles. This entails the government working collaboratively with employers and

representatives of employees (as industry) to ensure government training is relevant to the needs of the industry and provides the basis of good jobs.
The International Labour Organisation (ILO) provides a very useful guide for the engagement of industry in the setting and administration of skills for industry[2].

The options for industry engagement

The extent and influence of industry engagement can vary, as follows, with the ticks showing where Australia is engaging with JSCs.:

✓	Understanding the future skill needs of a sector and ensuring that learners can develop appropriate skills for the future
	Addressing a gap between what skills a sector is seeking and what is being delivered by TVET institutions
	Taking forward innovative skills solutions to address labour market changes, such as automation and globalisation
✓	Increasing the amount of employer investment in training and skills development
✓	Addressing youth unemployment and reducing the reliance on migrant labour
✓	Supporting and promoting government and industry skills initiatives
✓	Promoting skills development to employers and workers in a sector

The important note from the ILO is presented in the box. Industry engagement still needs active government to coordinate the disparate views that often arise from industry stakeholders.

> It is unlikely that introducing [industry engagement] will address a specific problem on its own and they may need to be considered as part of a range of policy interventions, such as reforming qualifications and curriculum; placing greater emphasis on workbased learning through apprenticeships and internships; making teacher training more relevant or investing in TVET institutions.

Australian Qualifications for Transport and Logistics

Under new industry engagement arrangements in Australia, responsibility for transport and logistics falls to Industry Skills Australia (https://www.industryskillsaustralia.org.au/.) along with other responsibilities.

The attachment shows the qualifications for supply-chain operations which cover many roles within the warehousing.

Global Recognition of Skills

It is worth noting that there are trends internationally for the global recognition of skills in addition to qualifications. Australia has a recognition system for qualifications awarded overseas. This allows for determining relevance to the Australian AQF to assist in permanent or temporary migrants to Australia to work or operate. Capacity to work or operate in professional and licensed roles are subject to additional criteria.

[2] https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_817129.pdf

The impact of digitisation

In 2021 a panel of experts in Australia examined the expected impact of digitisation on vocational education in Australia. It's report (https://www.digitalskillsformation.org.au/wp-content/uploads/2021/05/Digital-Transformation-Skills-Strategy-010521.pdf?v=2) outlines the expected extent of the impact. It concludes that by 2034 for Australia:

- Automation will displace 2.7m workers, 56% of whom are male
- Technology will augment 4.5m workers, leading to a 15% capacity uplift to Australian businesses.

The Panel emphasise that while digital transformation maybe synonymous with technology, it's those inherent human skills which can't be replicated by an algorithm that will future-proof the workforce and are now essential to build. The report emphasises the need for growing cognitive skills and general capabilities to work alongside digital competence.

Cognitive and metacognitive skills

In line with the findings of the panel, the International Labour Organisation has also highlighted the criticality of cognitive and metacognitive skills, for all workers[3]. Cognitive skills allow individuals to process and acquire new information and to better analyse information to apply it in a range of contexts. Metacognitive refers to the ability to reflect on the process of acquiring, processing and applying that information with the purpose of continual improvement.

These dimensions are becoming increasingly critical in Australia to support *digital inclusion* – to ensure citizens are not at risk of losing access to a livelihood in the wake of digital transformation of work and work practices. The recent emergence of Artificial Intelligence to supplement and substitute for some work and social functions amplify the need to build the core human skills such as cognitive and metacognitive skills.

Australia is Open to International Engagement

Australia is engaging on a learning journey with respect to vocational education and training to ensure its economy, society and residents continue to prosper and play an active part in a harmonious society.

Vocational education and training is an important vehicle for opportunity for citizens to improve their success in work and life.

Australian institutions such as RMIT have national and international standing for the quality and relevance of their education and training expertise in design, delivery and engagement.

Further information concerning the presentation, or this paper are available from the author.

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[3] https://www.ilo.org/skills/pubs/WCMS_813222/lang--en/index.htm

Qualifications	Qualification Purpose	Job Roles
Certificate II in Supply Chain Operations	For those engaged in supply chain operations support who undertakes a range of tasks involving known routines and procedures, with limited individual responsibility.	▪ depot yard person ▪ despatch clerk ▪ inventory clerk ▪ loader ▪ pick packer ▪ reach truck/forklift driver ▪ receiving clerk ▪ store person ▪ transport clerk ▪ warehouse operator ▪ yard person
Certificate III in Supply Chain Operations	For those engaged in supply chain operations, including specialisations for logistics and warehousing operations. It involves a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgement is required in selecting equipment, services or contingency measures within known time constraints. It may also include responsibility for coordinating the work of others.	▪ logistics operator ▪ rail terminal operator ▪ supply chain administration officer ▪ supply chain administration operator ▪ warehouse operator.
Certificate IV in Supply Chain Operations	For those engaged in supply chain operations and includes specialisations for logistics, purchasing and procurement, transport scheduling and warehousing. It involves a broad range of skilled operations, including requirements to evaluate and analyse current practices, develop new criteria and procedures for performing current practices, and providing leadership and guidance to others for planning their skill development and applying their skills.	▪ aviation scheduler ▪ despatch supervisor ▪ distribution centre supervisor ▪ facility manager ▪ inventory controller ▪ load/unload supervisor ▪ logistics coordinator/supervisor ▪ maritime scheduler ▪ rail operations scheduler ▪ receiving supervisor ▪ team leader ▪ transport allocator ▪ transport scheduler ▪ warehouse supervisor ▪ yard supervisor

Australian Qualifications for Transport and Logistics – Supply Chain Operation