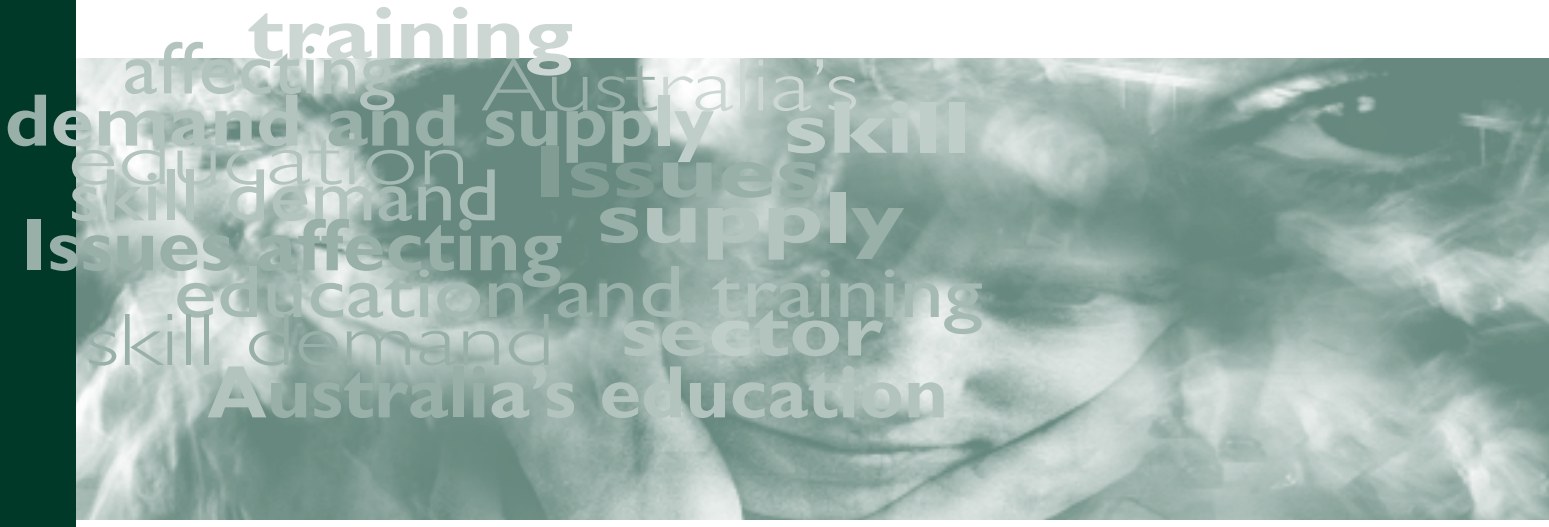

Issues affecting skill demand and supply in Australia's education and training sector

NCVER

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The requirements for skills in Australia are changing rapidly, reflecting the economic and social impact of developments in Australia's economy and those of the rest of the world.

In recent years the demand for skills has been influenced by the growth in part-time and casual employment, indicating the increasing importance of the service sector. The pool of part-time and casual employment has been expanded by increasing numbers of high school and tertiary students working part time while studying. Labour market changes have been accompanied by increased demand for higher level skills. At the same time, the actual number of people employed in lower skilled occupations has increased, although aggregate hours worked by lower skilled workers has declined.

Advances in information and communication technologies (ICT) have meant a change in workplace practices with most workers now requiring basic computing skills. In addition, employers expect all workers to demonstrate proficiency in both occupation-specific and generic skills. There is also the expectation that the employee will take on more of the responsibility for upgrading their skills. There is also an increased demand for high-level cognitive skills.

In line with most Organisation for Economic Co-operation and Development (OECD) countries, the Australian workforce is ageing. The ageing of the workforce has implications for the provision of education and training and the relative demand for entry-level training compared to the demand for education and training related to upskilling and retraining.

The demand for education and training is influenced by the changing industrial and occupational employment profile of the economy and the ageing of the workforce, including the lifetime career changes made by individuals as they age. About two out of every five school students over 15 years of age are employed, with employment predominantly in service sector industries such as retail trade and accommodation, cafes and restaurants. As they age, people will tend to move into other occupations with a diversity of training needs.

The likelihood of employment, job security and earnings all vary with the level of educational attainment. Completing senior secondary school or acquiring a basic vocational qualification is no longer adequate education and training for lifetime employment.

With post-compulsory education now an important requirement for gaining entry to the workforce, it is of no surprise to see school retention rates at high levels, with marked increases from those in previous decades.

Despite this, growth in post-compulsory education and training in Australia in recent times has been mixed. Strong growth in vocational education has resulted in participation levels rising steadily in recent years, from 8% in 1994 to more than 11% by 2000.

Following strong growth in the early-to-mid-1990s, growth in higher education has slowed, causing participation levels to stabilise at just over 4% since 1997. It should be noted that, without recent surges in apprenticeship and traineeship numbers, growth in general vocational education participation would have been much less.

Against this background, overall numbers of vocational education and training (VET) students would need to grow from 1.74 million in 2000 to an estimated 2.18 million by 2020 to maintain

the current level of participation (11.4%). At the same time, the number of higher education students would need to reach 871 000 (from 695 000) to maintain a participation rate of 4.6%. Future growth in post-compulsory education and training will become increasingly reliant on older people commencing or returning to some form of education and training.

In terms of outcomes, completion of post-compulsory education and training generally appears to deliver good employment outcomes. Within higher education, over 80% of graduates available for full-time employment found employment within five months of completing their course. This compares with around 73% for VET in general, and about 93% for those people who fully complete their apprenticeship or traineeship. However, no analysis has been possible to ascertain what skill attainment on its own may deliver in terms of employment outcomes, when compared with those without qualifications or without the necessary competencies.

In international terms, overall participation of 15 to 19-year-old Australians in all forms of education is 80.3%, just above the OECD average of 76.9%. This puts Australia's ranking at 13 out of the 29 OECD countries.

Australia has world-leading levels of participation amongst people aged between 30 and 50 years of age. Australia ranks equal second among the 29 OECD countries in participation of 30 to 39-year-olds, and first for those aged 40 years and over. In both cases, participation greatly exceeds the OECD averages. These rates of participation, however, include students studying part time, and it should be noted that Australia has a higher incidence of part-time students than most countries, particularly amongst older persons.

While Australia appears to have relatively high levels of participation, especially amongst older people, this has not translated into comparatively high levels of overall educational attainment. Although Australia has a high rate of university attainment by international standards, its performance in secondary education attainment is mixed. As a result, overall educational attainment in Australia is lower than the OECD average.

Introduction

Acquiring skills is an ongoing process in the lives of individuals. Skill attainment, in terms of qualifications achieved, provides a snapshot of the population's stock of skills at a point in this cycle. The supply of skills, however, is a more complex issue and covers the choices made by individuals over a lifetime, as well as choices made by employers. The pathways to skill formation can be varied and depend to a large extent on the individuals and an enterprise. Strategies to promote or adapt participation in education and training need to look at both individual and employer perspectives.

Australia's education and training system offers three major pathways in post-compulsory education: post-compulsory schooling in Years 11 and 12, vocational education and training (VET), and higher education. VET and higher education are collectively known as tertiary education.

The education and training sector is changing. Many people gain labour force experience while studying at school. Programs in tertiary education have become increasingly flexible, and it is now possible to transfer studies between different education sectors to complete a qualification. In addition, people have access to a greater spectrum of training through distance education and online learning,

In Australia, young people make up the major share of those engaged in institutional post-compulsory education and training. Most young people can be assumed to be in education and training to gain skills for entry to the labour market, frequently in fairly intensive, entry-level patterns of participation. Older people, particularly those already in employment, participate for a variety of reasons, including skills upgrading, job-related training, retraining to change jobs, or to re-enter the labour force. The education and training requirements of an individual changes over time, depending on age and their attachment to the labour market and workforce.

By the same token, employers respond to a range of business imperatives in seeking skills and have a variety of ways in which they attract, enhance and retain the skills they require. Traditionally, employers have relied primarily on recruiting people with the necessary skills and have provided on-the-job training to enable job-specific skills to be learnt. However, there appears to be evidence suggesting some changes in employer attitudes to the benefits and returns on investment in training

'Skilling' Australia is not a simple task and requires an ongoing mix of supply strategies across post-compulsory education and training, as well as within business enterprises.

This paper looks at a broad overview of the issues affecting the demand for skills in Australia and the implications of current trends in training and education on future skill supply.

With regard to demand, issues such as changes in skill levels and nature of work are presented and the implications of a changing labour market are examined. In particular, the changing demographics of the workforce, the changes in occupational and industry profile, and the changing educational requirements on skill demands are scrutinised.

On the supply side, trends in post-compulsory education and training are presented. Various levels of participation in education and training are examined, together with the demographic

profile of participants, the training available, and the outcomes achieved. Views of employers are also considered briefly.

Finally, the potential impact of Australia's ageing population on future levels of participation and general implications for the future of the education and training sector are considered.

While the analysis presented here is by no means exhaustive, it provides a valuable overview of the demands being placed on Australia's current education and training sector as it attempts to provide an adequate skill base for Australia's future.

Issues affecting the demand for skills in Australia

Transformation of the Australian workplace

The requirements for skills in Australia are changing rapidly, reflecting the economic and social impact of developments in the world economy. The demand for skills is expanding from a relatively narrow range of technical and job-related competencies to include a far broader range of generic and transferable skills.

Increase in employment of casual and part-time workers

The nature of the employment contract has changed radically in the last 20 years. Part-time employment in Australia rose from 6.8% of the workforce in 1980 to 11.9% in 2000 (Hancock & Safari 2001). In addition, casual employment as a proportion of the paid workforce increased from 13.0% in 1982 to 26.4% in 1999 (Watts 2001). The pool of part-time and casual workers has been expanded by increasing numbers of students in high schools and tertiary institutions working part time. It has also been augmented by the increased workforce participation of women workers with children who want part-time work, and older male workers unable to find full-time work.

Increased demand for higher level skills

Labour market changes have been accompanied by increased demands for higher level skills. Wooden (2000) notes that this is demonstrated by increased employment levels and increased wages for workers with higher level skills. When Wooden examined aggregate hours worked by skill levels (for the period May 1989 to May 2000) he found that managers and professionals, and associate professionals had significantly increased their share. Where managers/professionals had increased their share by 25%, associate professionals had increased their share by 45%. By contrast, workers at lower skill levels (that is, those from skilled vocations, and those with intermediate skills and elementary skills) had experienced growth which was lower than the national average. In addition, the unskilled workers' share of total hours decreased from 16.7% to 14.6%. However, although aggregate hours worked by lower skilled workers has declined, the actual number of people employed in lower skilled occupations has increased (Cully 1999).

There are other indications of an increasing demand for skills in the Australian labour market. Findings from a survey conducted by the Australian Industry Group (Allen Consulting 1999) indicated that the great majority of employers believed that within three to five years time more skills would be required of employees at all levels. In addition, an examination of the skills shortages identified by the Department for Employment, Work Relations and Small Business (DEWRSB 2001) also indicated that higher order cognitive skills and knowledge were required in trades and in the professions.

Increased requirements for ICT skills

Advances in information and communications technologies (ICT) have meant a change of workplace practices. Increasingly, enterprises comprise small groups coming together to work on

specific projects. Meetings are conducted by teleconference, videoconference or with internet facilities. In addition, the introduction of ICT technologies into production processes means that there has been a decline in numbers of jobs involving repetitive tasks such as telephonists, typists, telegraph operators and workers undertaking basic and low-skilled manual work. However, there has been an increased requirement for administrative assistants to be computer-literate and have proficient skills in typing, desk-top publishing, working with spreadsheets, and using accounting software packages (Lawson & de Matos 2000).

Australia is reported by the International Monetary Fund as being the 'third fastest growing advanced economy in terms of labour productivity (after Ireland and Finland) in relation to information and communication technology. Australia is second to Sweden in terms of IT spending as a proportion of GDP (Department of Trade 2001).

The report, *Australia's trade: Influences into the new millennium* (Department of Trade 2001), highlights the continuing impact of globalisation and international economic integration on the Australian economy. Advances in new technologies, increasing demand for Australian exports and supply of imports, and foreign investments were all considered major forces for continuing expansion. In 1997–98 over two-thirds (69%) of Australian exporters used the internet, while only 26% of non-exporters used the internet.

These developments call for education and training systems to provide workers with the up-to-date technical and generic skills required to apply, adapt or manage information-based technologies.

A mix of specific and generic skills

Companies are expecting all workers to demonstrate proficiency in both occupation-specific and generic skills. There is also an expectation that they will take on more of the responsibility for upgrading their skills. A study by Wooden et al. (2001) showed that prison workers, bank workers, and production line workers were all required to demonstrate continued proficiency in their technical occupational skills (hard skills) in addition to the interpersonal and diagnostic skills (soft skills) required for improving outcomes.

Interviews and focus groups conducted for the Australian Industry Group (Allen Consulting 1999) with employers highlighted the importance of high-level enterprise or job-specific technical skills in addition to core or generic skills. Generic skills included:

- literacy and numeracy skills
- information technology capability
- ability to learn
- willingness to adapt to change
- independent problem-solving and reasoning capability
- practicality and business orientation
- application of quality concepts
- the ability to work in teams
- pride in one's work
- the ability to communicate effectively with customers

Managers also require the generic core skills, as well as the ability to mobilise their employees to work together to achieve outcomes. Increasingly, they will be required to learn to operate in knowledge-intensive environments.

Trends in the labour market—1991 to 2001

The worldwide developments in skill needs and workplace requirements have been reflected in the changes that have taken place in the Australian economy and labour market over the last decade. In this section the growth in female employment, part-time work, and the changing

demographic, industrial and occupational structure for Australia is discussed in the context of these changes. In particular, the changes highlight an increasing demand for higher level skills.

The Australian labour force participation rate has been relatively constant over the decade, increasing by only 0.3 of a percentage point between 1991 and 2001. In May 2001, 6.8% of the labour force were unemployed.

Over the last decade, part-time employment has grown at a faster rate than has full-time employment for both men and women. Between 1996 and 2001, the number of men in full-time employment increased by 4%, while the number in part-time employment increased by 30%. The number of women in full-time employment and part-time employment increased by 12% and 15%, respectively, during this period.

The changes in the proportion of the workforce employed part time have implications for the provision and delivery of education and training, since employers are less likely to fund the training of part-time employees. Furthermore, the education and training needs of part-time workers are different from those of full-time workers.

Table 1: Australian labour force trends, 1991–2001

	Males			Females			Persons				
	Full-time	Part-time	Full-time	Full-time	Part-time	Full-time	Total employed	Unemployed	Labour force	Unemployment rate	Participation rate
	'000s	*'000s*	*%*	*'000s*	*'000s*	*%*	*'000s*	*'000s*	*'000s*	*%*	*%*
1991	4086.9	409.3	91	1905.7	1337.0	59	7738.9	812.2	8551.1	9.5	63.5
1996	4210.3	537.6	89	2042.2	1546.9	57	8337.1	758.2	9095.2	8.3	63.5
2001	4396.8	701.1	86	2278.2	1773.0	56	9149.0	669.1	9818.1	6.8	63.8

Source: Derived from *The labour force,* Australia, ABS cat. no. 6203.0, May, 1991, 1996, 2001

The youth labour market

School-to-work transition for Australian students needs to be understood in terms of the changing needs of the labour market. It is also important to note that, increasingly, the concept of a specific and measurable transition period where students are committed to preparing themselves for work is becoming less meaningful. Today school and work for many students co-exist in a symbiotic relationship, and students often have casual and part-time jobs while they are still at school. Information about the labour force status of young people, 15 to 24 years of age in May 2001, including those engaged in education and training is provided in table 2.

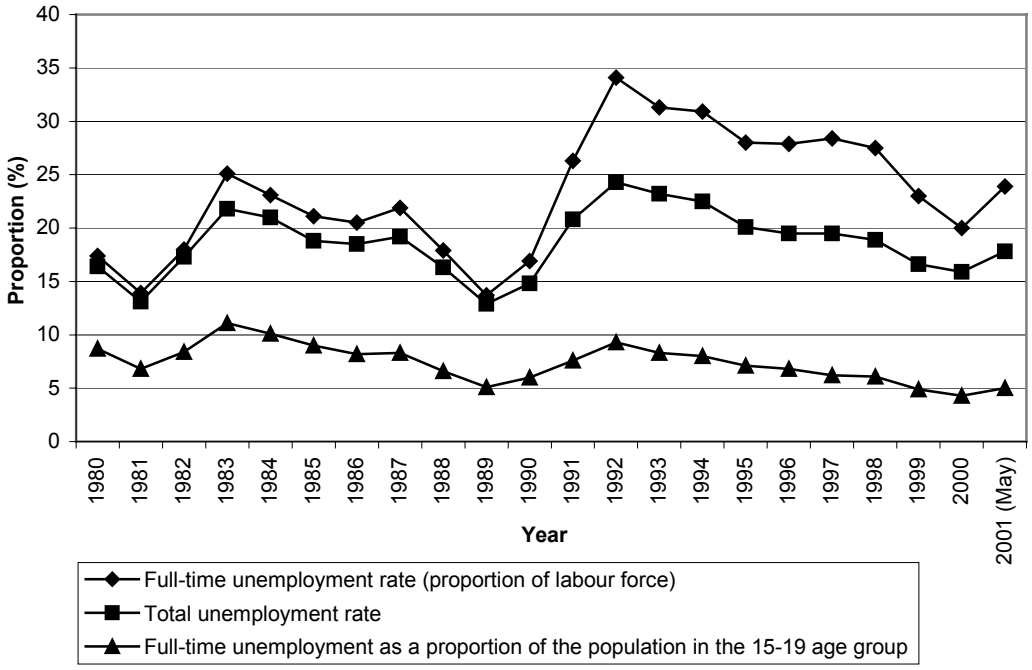
There have been major changes to the Australian teenage labour market over the last two decades. The labour force participation rate for teenagers aged 15 to 19 years of age has oscillated between 63% in 1980 and 60% in 2001 after reaching a minimum of 52% in 1992 during the recession of the early 1990s. At the start of the 1980s, almost four out of every five teenagers who were in employment were employed full time. In 2001, less than a third of teenagers in employment were employed full time. While the full-time unemployment rate (number unemployed and looking for full-time work as a proportion of the age cohort in the labour force) has remained over 20% since 1990, the proportion of the age cohort unemployed and looking for full-time work has been relatively stable since 1980 and is currently around 5%, having steadily declined since 1992. The teenage unemployment rates and the proportion of the 15 to 19-year-age cohort looking for full-time employment are shown in figure 1.

Table 2: Labour force status of Australian 15 to 24-year-olds, May 2001

		15 to 19-year-olds			20 to 24-year-olds		
		Males	Females	All persons	Males	Females	All persons
Unemployed	Non-student	5.7	3.7	4.7	8.6	6.5	7.5
	School student	3.8	4.8	4.3	0.0	0.0	0.0
	Tertiary student—VET or university	1.5	1.8	1.7	1.7	1.6	1.6
Employed	Full-time	19.8	12.5	16.2	58.0	46.5	52.3
	Part-time, non-student	6.0	7.3	6.6	7.8	13.5	10.6
	Part-time, school student	15.2	19.3	17.2	0.0	0.0	0.0
	Part-time tertiary student—VET or university	7.5	11.1	9.2	8.9	11.6	10.2
Not in the labour force	Non-student	3.2	4.3	3.7	5.0	12.0	8.4
	School student	30.7	27.7	29.2	0.0	0.0	0.0
	Tertiary student—VET or university	6.6	7.6	7.1	10.1	8.3	9.2
Total		**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: *The labour force,* Australia, ABS cat. no. 6203.0, May, 2001

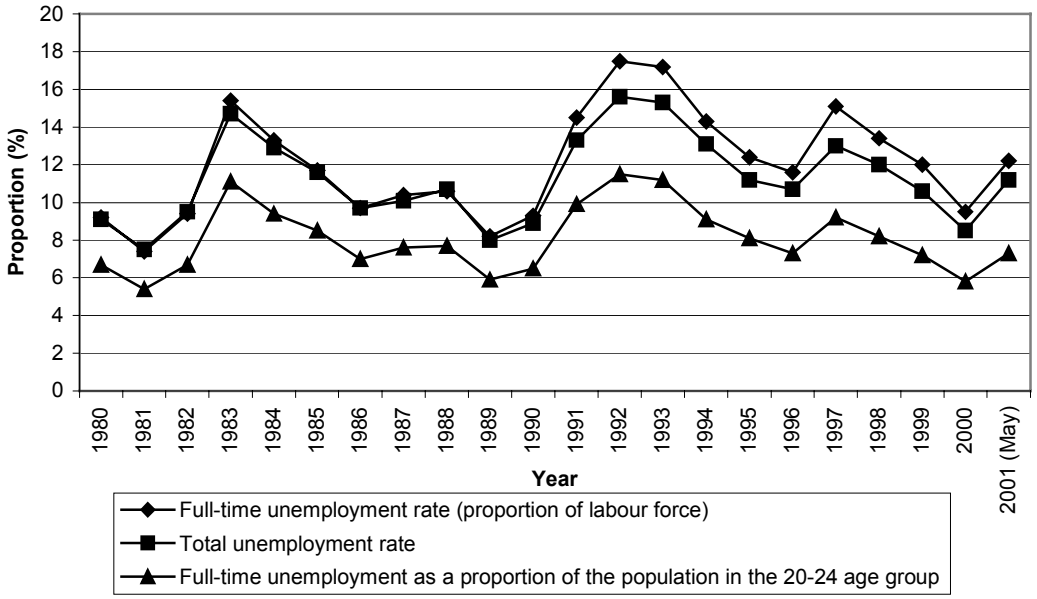
Figure 1: Youth unemployment rate (15 to 19-year-olds)



In contrast to the situation for teenagers, there has been little change in the labour force participation rate of young adults aged 20 to 24 years over the last two decades. Over the period 1980 to 2001, the labour force participation rate of 20 to 24-year-olds oscillated between a minimum of 80% (1982) and a maximum of 84% (1990). However, there has been a dramatic change in the composition of employment as the proportion employed part time relative to full time increased over the two decades. In 1980, almost 90% of young adults who were employed, were employed full time compared with 70% in 1991. Unlike the situation facing teenagers looking for full-time work, the full-time unemployment rate for 20 to 24-year-olds is currently around 12%, having declined from about 18% in 1992 to 10% in 2000. The proportion of the age cohort who were unemployed and looking for full-time work has ranged between 6 and 12% over the last two decades and is currently around 7%. The young adult unemployment rates and

the proportion of the 20 to 24-year-age cohort looking for full-time employment are shown in figure 2.

Figure 2: Youth unemployment rate (20 to 24-year-olds)



Source: *The labour force,* Australia, ABS cat. no. 6203.0, May, 2001

Changing demographics of the workforce

A picture has emerged in Organisation for Economic Co-operation and Development (OECD) countries of increased longevity, due to declining rates of poor health, and decreased fertility rates. In line with most OECD countries, the Australian workforce is ageing, with people in older age groups accounting for a growing proportion of the population. These demographic changes and subsequent effects on the supply of skills and labour will require a shift in vocational education and training policy. In addition to ensuring sufficient supplies of entry-level skills usually provided by younger people, more focus will have to be placed on upgrading or transforming the skills of existing workers from older age groups.

A summary of the changes that have taken place in the age profile of the Australian workforce is provided in table 3. The notable changes are the decline in the proportion of the workforce under 25 years of age and the increase in the proportion of the workforce over 45 years of age. In 1991, 22% of the workforce was under 25 years of age. By 2001, this proportion had declined to 20%. In 1991, only a quarter (25%) of the Australian workforce was over 45 years of age. In 2001, about 32% of the workforce are over 45 years of age.

The change in the age profile of the workforce has implications for the provision of education and training and the relative demand for entry-level training compared to the demand for education and training related to upskilling and retraining.

Table 3: Age profile of Australia's workforce, 1991–2001

	Age group								
	15–19	20–24	25–34	35–44	45–54	55–59	60 and over	All ages	**Total no. all ages**
	%	*%*	*%*	*%*	*%*	*%*	*%*	*%*	***'000s***
1991	8.9	13.5	26.5	25.6	16.8	4.7	4.0	100.0	**8551.1**
1996	8.2	12.8	25.1	25.1	19.8	5.1	4.0	100.0	**9095.2**
2001	8.3	11.5	24.1	24.5	21.2	6.2	4.2	100.0	**9805.6**

Source: Derived from *The labour force,* Australia, ABS cat. no. 6203.0, May, 1991, 1996, 2001

Industry structure

The industry employment profile of Australia in 1996 and 2001 is shown in table 4. These industry categories refer to the Australian and New Zealand Standard Industry Classifications (ANZSIC) used by the Australian Bureau of Statistics (ABS). The relative importance of the manufacturing sector to the Australian economy is steadily declining and the proportion of the workforce employed in the service sector continues to increase. The proportion of the Australian workforce employed in agriculture, forestry and fishing, and manufacturing declined from 5.1% to 4.7%, and from 13.2% to 12.3%, respectively, over the five-year period, 1996 to 2001. Over these five years, there was an increase in the proportion of the workforce employed in the service sector in property and business services (from 9.6% to 11.7%), health and community services (from 9.2% to 10.0%) and cultural and recreational services (from 2.1% to 2.5%).

Table 4: Industry employment profile, Australia, 1996–2001

Industry	**1996**		**2001**	
	'000	%	'000	%
Agriculture, forestry & fishing	424.0	5.1	429.4	4.7
Mining	87.5	1.0	78.3	0.9
Manufacturing	1103.8	13.2	1119.4	12.3
Electricity, gas & water supply	73.9	0.9	67.5	0.7
Construction	596.7	7.2	667.6	7.3
Wholesale trade	500.8	6.0	431.1	4.7
Retail trade	1256.8	15.1	1347.9	14.8
Accom., cafes & restaurants	377.5	4.5	465.1	5.1
Transport & storage	395.6	4.7	424.2	4.6
Communication services	166.3	2.0	188.5	2.1
Finance & insurance	321.6	3.9	353.9	3.9
Property & business services	802.3	9.6	1066.0	11.7
Government admin. & defence	365.9	4.4	372.7	4.1
Education	596.2	7.2	629.2	6.9
Health & community services	767.7	9.2	909.9	10.0
Cultural & recreational services	178.0	2.1	224.6	2.5
Personal & other services	322.5	3.9	358.5	3.9
Total	**8337.1**	**100.0**	**9133.8**	**100.0**

Source: Derived from *The labour force,* Australia, ABS cat. no. 6203.0, May, 1996, 2001

Occupational structure

The occupational structure of the Australian workforce in May 2001 is shown in table 5. The largest occupational category is professionals (18.6%), followed by intermediate clerical sales and service workers (17.1%) and tradespersons (12.7%). It is not possible to analyse in detail changes to the proportion of the workforce employed in all occupational categories over the last decade because of changes to the ABS occupational classification in 1997. However, it is possible to analyse changes by aggregating occupational categories. The distribution of employment by broad occupational categories for Australia between 1991 and 2001 is shown in table 6. Between May 1991 and May 2001, the proportion of the workforce employed as managers and administrators, professionals and associate professionals/para-professionals increased from around 30% of the workforce in 1991 to 38% in 2001. The increase in the proportion of the workforce employed in this occupational grouping has occurred in the last five years. Over the decade to May 2001, there has been a decline in the proportion of the workforce employed as tradespersons, from 14.9% in May 1991 to 12.7% in May 2001. Most of this decline has occurred in the last five years. The proportion of the workforce employed as clerks, salespersons and personal service workers has been relatively stable over the decade at around 32% of the workforce. The proportion of the workforce employed as intermediate production and transport workers, plant and machine operators and drivers and labourers and related workers has declined over the decade from 23% in 1991 to 18% in 2001. The decline in the proportion of the workforce employed in this occupational grouping has occurred in the last five years.

Over the last five years there has been a relative increase in the proportion of the workforce employed in occupations requiring higher level skills and a decline in the proportion of the workforce employed in occupations requiring lower level skills. The decline in the proportion of the workforce employed in tradesperson occupations reflects the decline in employment in the manufacturing sector and the relative growth of the service sector.

Table 5: Occupational employment profile, Australia, 2001

Occupation	'000s	%
Managers & administrators	689.5	7.5
Professionals	1698.3	18.6
Associate professionals	1053.6	11.5
Tradespersons & related workers	1163.0	12.7
Advanced clerical & service workers	417.5	4.6
Intermediate clerical, sales & service workers	1558.2	17.1
Intermediate production & transport workers	787.9	8.6
Elementary clerical, sales & service workers	909.1	10.0
Labourers & related workers	856.7	9.4
Total	**9133.9**	**100.0**

Source: Derived from *The labour force,* Australia, ABS cat. no. 6203.0, May, 2001

Table 6: Distribution of occupations, Australia, 1991–2001

	1991	1996	2001
	%	%	%
Group 1			
Managers & administrators	11.1	10.6	7.5
Professionals	13.2	14.1	18.6
Associate professionals/para-professionals	5.9	5.8	11.5
Sub-total group 1	*30.2*	*30.5*	*37.7*
Group 2			
Tradespersons & related workers	14.9	14.3	12.7
Group 3			
Clerks & salespersons & personal service workers	32.2	33.6	31.6
Group 4			
Intermediate production & transport workers/plant & machine operators & drivers	7.3	6.8	8.6
Labourers & related workers	15.3	14.8	9.4
Sub-total group 4	*22.6*	*21.6*	*18.0*
Total (%)	**100.0**	**100.0**	**100.0**
Total (number '000s)	**7704.1**	**8337.1**	**9133.8**

Source: *The labour force,* Australia, ABS cat. no. 6203.0, May, 1991, 1996, 2001

Lifetime changes in industry and occupation

The demand for education and training is influenced by the changing industrial and occupational employment profile of the economy, the ageing of the workforce and the lifetime career changes made by individuals as they age. Each of these factors affects the demand for skills.

In Australia, about two in five school students over 15 years of age are employed. The age profile of the employed people by industry and occupation is shown in table 7. Young people under 25 years of age are predominantly employed in 'retail trade' and 'accommodation, cafes and restaurants' industry categories. Between 25 and 54 years of age, over 13% of the workforce are employed in manufacturing industries. A relatively high proportion of people (14%) aged 25 to 34 years of age is employed in 'property and business services', while 11% of employed people over 55 years of age are in 'agriculture, forestry and fishing'.

About two in five teenagers are employed as elementary clerical, sales and service workers. Almost a quarter (24%) of young adults aged 20 to 24 years of age are employed as intermediate clerical, sales and service workers. For people over 25 years of age the most common occupational grouping is professionals.

The lifetime changes in occupation illustrate the different skill requirements and education and training needs that occur for an individual over time. These changes need to be accommodated by the education and training system, as the skills required for the labour market by a teenager are quite different from those of people in middle age and in the later stages of their working life.

Table 7: Age profile of employed persons by industry and occupation, May 2001

	Age group (years)						
	15–19	20–24	25–34	35–44	45–54	55 and over	**All ages**
	%	%	%	%	%	%	**%**
Industry							
Agriculture, forestry & fishing	3.6	3.1	3.5	4.5	4.3	11.1	**4.7**
Mining	0.1	0.4	1.0	1.1	1.1	0.4	**0.9**
Manufacturing	6.3	11.2	13.6	12.9	13.0	11.3	**12.3**
Electricity, gas & water supply	0.1	0.4	0.8	0.9	0.9	0.7	**0.7**
Construction	5.2	7.1	7.8	7.6	7.4	6.9	**7.3**
Wholesale trade	2.3	4.7	4.6	5.3	4.9	5.0	**4.7**
Retail trade	49.7	21.3	11.6	10.2	10.5	10.6	**14.8**
Accom., cafes & restaurants	10.1	8.6	5.0	4.1	3.3	4.0	**5.1**
Transport & storage	1.5	3.4	4.8	5.1	5.3	5.3	**4.6**
Communication services	0.6	1.8	2.5	2.5	2.1	1.4	**2.1**
Finance & insurance	1.2	4.1	5.4	4.4	3.2	2.3	**3.9**
Property & business services	5.9	12.1	13.6	11.2	11.3	12.6	**11.7**
Government admin. & defence	0.9	2.4	4.1	5.0	5.1	3.8	**4.1**
Education	1.3	4.6	5.3	7.6	10.2	8.2	**6.9**
Health & community services	3.5	7.8	9.0	11.6	11.8	11.3	**10.0**
Cultural & recreational services	3.8	3.0	2.9	2.0	2.0	2.0	**2.5**
Personal & other services	3.9	4.0	4.6	3.9	3.6	3.1	**3.9**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Occupation							
Managers & administrators	0.3	1.1	5.7	8.6	10.5	14.8	**7.5**
Professionals	2.0	14.3	21.9	19.9	21.2	18.7	**18.6**
Associate professionals	2.9	8.8	12.3	12.7	12.7	13.6	**11.5**
Tradespersons & related workers	12.7	15.4	14.1	13.0	10.5	10.7	**12.7**
Advanced clerical & service workers	1.6	4.0	4.7	4.8	5.2	5.0	**4.6**
Intermediate clerical, sales & service workers	16.4	23.7	17.9	16.4	15.6	13.1	**17.1**
Intermediate production & transport workers	7.1	6.9	8.3	9.5	9.4	8.7	**8.6**
Elementary clerical, sales & service workers	39.9	16.5	6.6	6.2	6.4	6.3	**10.0**
Labourers & related workers	17.1	9.3	8.5	9.0	8.4	9.0	**9.4**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: *The labour force,* Australia, ABS cat. no. 6203.0, May, 2001

Skill patterns by industry and occupation

The diverse skill requirements of different industries and occupations is shown in table 8. While comprehensive information on the actual skills required by different industries is not available, one in every two (51%) people employed in Australia in May 2000 held a post-school qualification. Almost two-thirds (65%) of all tradespersons and 87% of all professionals held a post-school qualification. Most tradespersons held a vocational qualification, while professionals typically held a higher education qualification. Conversely, only one in five people working in labouring occupations or in elementary clerical, sales and service worker occupations held a post-school qualification. A third of all people working in agriculture, forestry and fishing, and 30% of people working in retail trade industries held a post-school qualification.

Table 8: Qualification profile of employed persons aged 15 to 64 years by industry and occupation, May 2000

	With post-school quals	Higher ed.	VET	Without post-school quals	Completed highest level of school only	Did not complete highest level of school	Total
Industry							
Agriculture, forestry & fishing	33.6	9.8	23.7	66.4	15.3	51.2	**100.0**
Mining	59.2	21.2	38.0	40.8	10.8	30.0	**100.0**
Manufacturing	49.6	16.1	33.5	50.4	16.4	34.0	**100.0**
Electricity, gas & water supply	62.9	21.6	41.3	37.1	12.8	24.3	**100.0**
Construction	54.8	7.0	47.8	45.2	13.9	31.3	**100.0**
Wholesale trade	42.8	15.2	27.6	57.2	22.6	34.6	**100.0**
Retail trade	30.3	9.0	21.3	69.7	25.9	43.8	**100.0**
Accom., cafes & restaurants	34.4	10.8	23.6	65.6	29.3	36.3	**100.0**
Transport and storage	41.9	14.2	27.8	58.1	19.8	38.3	**100.0**
Communication services	47.1	20.5	26.5	52.9	23.6	29.4	**100.0**
Finance & insurance services	47.8	30.9	16.9	52.2	31.2	21.0	**100.0**
Property & business services	61.7	39.2	22.5	38.3	19.1	19.2	**100.0**
Government admin. & defence	62.5	38.7	23.8	37.5	16.7	20.8	**100.0**
Education	79.8	67.8	11.9	20.2	8.7	11.5	**100.0**
Health and community services	70.2	49.3	20.9	29.8	10.7	19.1	**100.0**
Cultural & recreational services	49.4	28.8	20.6	50.6	24.6	26.0	**100.0**
Personal & other services	51.0	17.7	33.3	49.0	19.8	29.2	**100.0**
Total	**51.1**	**25.0**	**26.1**	**48.9**	**18.9**	**30.1**	**100.0**
Occupation							
Managers & administrators	59.6	34.0	25.5	40.4	14.7	25.7	**100.0**
Professionals	87.1	77.4	9.8	12.9	8.7	4.2	**100.0**
Associate professionals	56.8	26.4	30.4	43.2	21.0	22.2	**100.0**
Tradespersons & related workers	65.0	3.8	61.2	35.0	11.2	23.8	**100.0**
Advanced clerical & service workers	46.4	16.5	29.9	53.6	21.8	31.9	**100.0**
Intermediate clerical, sales & service workers	40.7	14.2	26.5	59.3	28.1	31.2	**100.0**
Intermediate production & transport workers	27.1	5.1	22.0	72.9	20.0	52.9	**100.0**
Elementary clerical, sales & service workers	22.2	8.8	13.4	77.8	29.4	48.4	**100.0**
Labourers & related workers	22.5	4.7	17.7	77.5	19.6	58.0	**100.0**
Total	**51.1**	**25.0**	**26.1**	**48.9**	**18.9**	**30.1**	**100.0**

Source: Unpublished ABS data from the Transition from Education to Work Survey, May 2000

Skills, educational attainment, employment and earnings

The likelihood of employment varies by level of educational attainment. The level of educational attainment by age, the employment to population by educational attainment ratio and unemployment rate for each level of educational attainment in Australia in May 2000 is shown in table 9. About 44% of people in Australia aged 15 to 64 held a post-school qualification in May 2000. The likelihood of employment for people aged 15 to 64 with a post-school qualification was substantially higher than for people aged 15 to 64 without a post-school qualification. About 81% of people with a post-school qualification were employed in May 2000 compared with 64% of those without a post-school qualification. The unemployment rate for people aged 15 to 64 with a post-school qualification was 4.4% compared with 8.6% for those without a post-school qualification.

Table 9: Persons aged 15 to 64 in Australia—educational attainment by age, May 2000

	Labour force participation rates	Employment/ population	Unemployment rate	Age group						
				15–19	20–24	25–34	35–44	45–54	55–64	15–64
	%	%	%	%	%	%	%	%	%	%
With post-school qualifications	85.1	81.3	4.4	4.4	40.5	54.0	52.0	48.9	38.6	43.8
Higher education	86.5	85.7	3.4	0.4	17.5	27.3	25.0	24.0	17.0	20.9
Higher degree	91.2	88.3	3.2	0.0	0.1	2.1	3.2	2.8	1.8	2.0
Postgraduate diploma	88.1	85.7	2.7	0.1	0.5	2.4	2.9	3.2	1.7	2.2
Bachelor degree	88.0	85.3	3.0	0.0	12.3	17.6	13.0	11.2	7.6	11.5
Undergraduate diploma	80.7	78.9	4.9	0.3	4.5	5.2	6.0	6.7	5.9	5.2
VET	83.8	76.8	5.3	4.0	22.9	26.7	26.9	24.9	21.5	22.9
Associate diploma	85.2	80.8	5.2	0.1	3.2	4.0	3.7	3.2	2.1	3.0
Skilled vocational qualification	86.6	83.1	4.1	1.0	9.7	13.5	13.7	12.7	13.1	11.6
Basic vocational qualification	79.4	73.7	7.2	2.9	10.0	9.2	9.6	8.9	6.4	8.3
Without post-school qualifications	69.6	63.6	8.6	45.0	59.4	45.9	48.0	51.1	61.4	50.8
Completed highest level of school	75.6	70.1	7.2	27.6	39.8	19.1	13.7	12.7	12.2	18.8
Attending tertiary in May 2000	68.5	62.4	8.8	18.9	21.6	3.0	1.2	0.5	0.2	5.4
Not attending tertiary in May 2000	78.4	73.2	6.7	8.7	18.2	16.1	12.6	12.2	11.9	13.4
Did not complete highest level of school	66.1	59.9	9.5	17.3	19.5	26.8	34.1	38.3	49.0	32.0
Attending tertiary in May 2000	74.0	65.7	11.2	6.7	2.7	1.3	1.4	1.0	0.4	1.9
Not attending tertiary in May 2000	65.6	59.5	9.3	10.6	16.8	25.4	32.7	37.3	48.6	30.1
Still at school	41.0	33.5	18.3	50.7	0.1	0.0	0.1	0.1	0.0	5.4
Total	**74.8**	**69.7**	**6.8**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Total number ('000s)				**1 338.3**	**1 342.7**	**2 852.1**	**2 896.8**	**2 543.5**	**1 679.2**	**12 652.7**

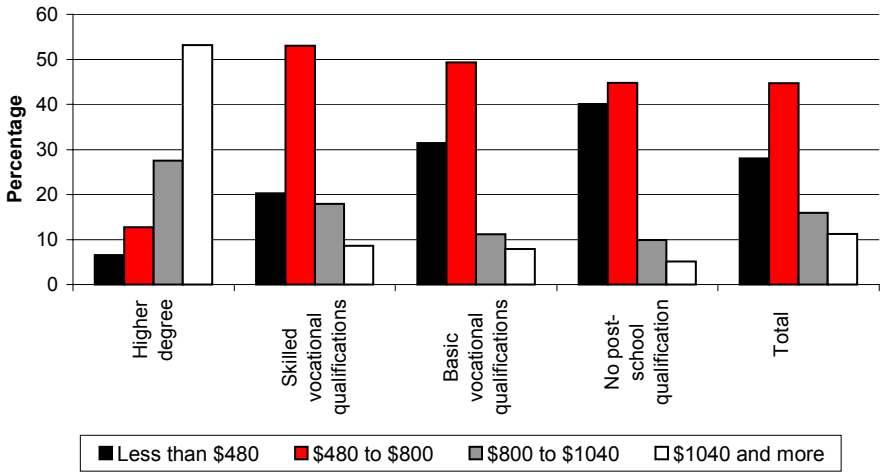
Source: Unpublished data from ABS Transition from Education to Work Survey, May 2000

About 70% of all people aged 15 to 64 who had completed the highest level of schooling were employed. This compares with rates of employment varying from 74% for all people aged 15 to 64 with a basic vocational qualification to 85% of people who held a bachelor's degree. These differential employment rates demonstrate the benefit to individuals of the attainment of a post-school qualification and suggest that the completion of senior secondary school with no further education and training is no longer adequate education and training for lifetime employment.

For people who held a basic vocational qualification (defined by the ABS as certificates I and II of the Australian Qualifications Framework [AQF]), the likelihood of employment was considerably lower than for people who had attained a higher level vocational qualification (defined by the ABS as certificate III and IV of the AQF). About 83% of people who held a skilled vocational qualification and 81% of people who held an associate diploma were employed in May 2000, compared with 74% of those who held a basic vocational qualification. In addition, the unemployment rate for those with a basic vocational qualification was relatively high at 7.2% compared with unemployment rates of 4.1% and 5.2% for people holding skilled vocational and associate diploma qualifications, respectively. These statistics demonstrate the value to an individual of the attainment of a higher level vocational qualification compared to basic vocational qualification at certificate level II or below.

The distribution of earnings varies by the level of educational attainment (see figure 3), and earnings over a lifetime also varies by the level of educational attainment. While employed workers with a qualification from the higher education sector generally achieve a higher level of income with age, the income level of workers with a skilled vocational qualification or basic vocational qualification remains relatively constant with age. Similarly, the level of income of workers without a post-school qualification does not vary with age.

Figure 3: Full-time weekly earnings, by qualification, 1997



Source: Unpublished data from ABS Survey of Education and Training, 1997

Skills and job security

The average weekly hours worked and the likelihood of unemployment varies by industry and occupation. For people employed in relatively low-skilled jobs, the likelihood of unemployment is greater than for people employed in relatively high-skilled jobs. The unemployment rate for people in labouring occupations and in elementary clerical, sales and service occupations was almost 8% and 7%, respectively, in May 2001. This compares with an unemployment rate of less than 3% for managers and administrators, professionals, associate professionals and advanced clerical and service workers. Similarly, the weekly hours of work are typically longer for higher skilled occupations than for lower skilled occupations.

Supply of skills from the education and training sector

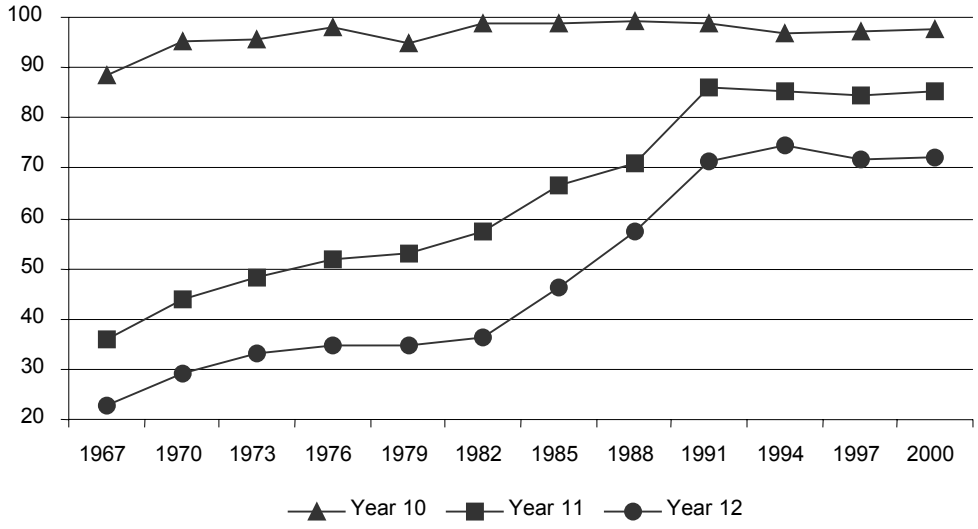
Post-compulsory schooling

In 1995, there were 372 000 students undertaking post-compulsory schooling in Australia (that is, Years 11 and 12). This number had increased to over 404 000 by 2000.

Commensurate with the changes that have taken place in the teenage labour market in Australia since the 1970s, there have been major changes to retention rates in the final years of secondary schooling. This has been complemented by growth in school completion.

As shown in figure 4, there have been marked increases in apparent retention rates in Australia for Years 11 and 12 since the mid-1960s, when less than a quarter of all school students remained at school to complete Year 12. At the start of the 1980s, just over a third of students completed senior secondary school. By contrast, by 2000, only about 2% of all school students did not remain at school to complete Year 10; 15% did not complete Year 11, and just over a quarter did not complete Year 12. The apparent retention rates have generally stabilised since the early to mid-1990s.

Figure 4: Apparent retention rates of students to Years 10, 11 and 12



Source: *Schools Australia*, ABS cat. no. 4221.0, 1997, 1994, 2000; Selected Secondary School statistics, Department of Employment, Science and Training (DEST)

As noted by Ball and Lamb (2001), many of those who do not remain at school to complete Year 12 engage in other forms of education and training. They estimated that about 13% of students do not complete Year 12 or engage in some other form of education and training.

Table 10 shows the employment and study status of those students who were attending school in 1999, but were not attending school in May 2000.

Of the 303 000 students who left school in 1999, 178 000 (59%) were employed the following May (either full time or part time), 44 000 (15%) were unemployed, and 80000 (26%) were not in the labour force (that is, not seeking any form of employment). In addition, 167 000 (55%) were attending some form of recognised study, 14 000 (5%) were attending some form of non-recognised study and 121 000 (40%) were not attending any form of study.

Table 10: Persons aged 15 to 24 who left school in 1999[(a)], Australia, May 2000 (%)

	Employed	Unemployed	Not in the labour force	Total	Number
Attending recognised study in May 2000[(b)]	53.6	10.4	36.0	**100.0**	**167 390**
Attending non-recognised study in May 2000	44.1	21.5	34.5	**100.0**	**14 470**
Not attending in May 2000	67.6	19.9	12.5	**100.0**	**121 330**
Total	**58.8**	**14.7**	**26.5**	**100.0**	**303 190**
Number of students	**178 180**	**44 600**	**80 410**	**303 190**	

Notes [(a)] Comprises persons who attended school in 1999 and were not attending school in May 2000.
[(b)] Includes a small number of persons attending secondary school courses.

Source: *Transition from Education to Work*, ABS cat. no. 6227.0, May 2000

Of particular interest are the people who continue studying while taking up some form of employment. Over half (54%) of 1999 school leavers attending some form of recognised study the following year were also involved in some form of employment (table 10).

As shown in table 11, over a quarter (26%) of these were employed full time. However, the proportion depends greatly on the type of study being attended. For example, a high proportion of those studying skilled vocational courses were employed full time, while much smaller proportions studying degrees and diplomas were employed full time. This has important ramifications for training delivery, as students undertaking training while employed will require greater flexibility in training options than those students without employment.

Table 11: Persons aged 15 to 24 who left school in 1999[(a)] and were attending recognised study while employed, Australia, May 2000

Type of study	Employed full time	%	Employed part time	%	Total employed	%
Bachelor degree or higher	745	1.9	38 936	98.1	39 682	100.0
Undergraduate diploma	738	7.9	8 609	92.1	9 347	100.0
Associate diploma	681	12.8	4 628	87.2	5 309	100.0
Skilled vocational course	17 526	78.0	4 948	22.0	22 474	100.0
Basic vocational course	4 015	31.0	8 952	69.0	12 967	100.0
Total	**23 707**	**26.4**	**66 073**	**73.6**	**89 780**	**100.0**

Notes: [(a)] Comprises persons who attended school in 1999 and were not attending school in May 2000.
[(b)] Includes a small number of persons attending secondary school courses.

Source: *Transition from Education to Work*, ABS cat. no. 6227.0, May 2000

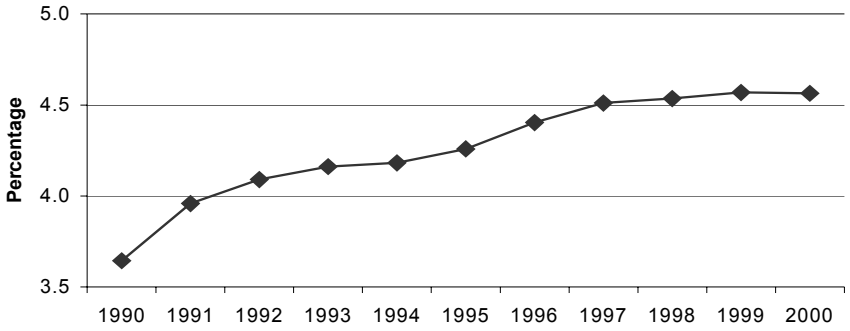
A number of secondary students also participate in vocational education and training while at school. Since the introduction of the VET- in-Schools program, a growing number of schools are becoming registered training providers of VET. By 2000, there were over 153 000 secondary school students participating in a VET-in-Schools program.

In addition, there is a considerable amount of other activity which sees a much more substantial involvement of technical and further education (TAFE) with school students. For example, almost 56 000 school students in Australia attended a TAFE institute in 1999 while another 38 000 were enrolled in TAFE but were attending a school-based campus of a TAFE institute. These 94 000 students represented about 7.6% of all TAFE students in 1999.

Higher education

The number of higher education training students in Australia totalled just under half a million people in 1990 and has since risen to reach almost 700 000 by 2000. For Australia's population aged 15 and above, participation in higher education reached 4.6% in 2000. This compares with 3.6% in 1990, and 4.3% in 1995 (figure 5).

Figure 5: Participation in higher education, Australia, 1990–2000



Source: Selected Australian demographic statistics from ABS; Selected higher education statistics from DEST

In 1994, around 353 000 people aged under 25 years were studying in higher education institutions across Australia, this number growing to 423 000 by 2000 (up 19.7%). Those aged under 25 accounted for almost two-thirds (60.8%) of students in 2000, a similar proportion to that of 1994 (60.3%).

While the number of higher education students aged 25 to 39 years has grown from around 171 000 in 1994 to 198 000 by 2000 (up 15.9%), the proportion of total students aged 25 to 39 years has declined slightly, from 29.2% in 1994 to 28.5% in 2000.

In percentage terms, the greatest growth has occurred for students aged 40 years or more, with numbers increasing by 21.6%, from 62 000 in 1994 to 75 000 students in 2000. This increase has seen the proportion of students aged 40 years or more rising slightly from 10.5% in 1994 to 10.8% by 2000.

Recent research from Marks et al. (2000) showed that gender differences had grown over time, with young women increasingly participating in higher education. In fact by 2000, there were over 70 000 more female higher education students than male.

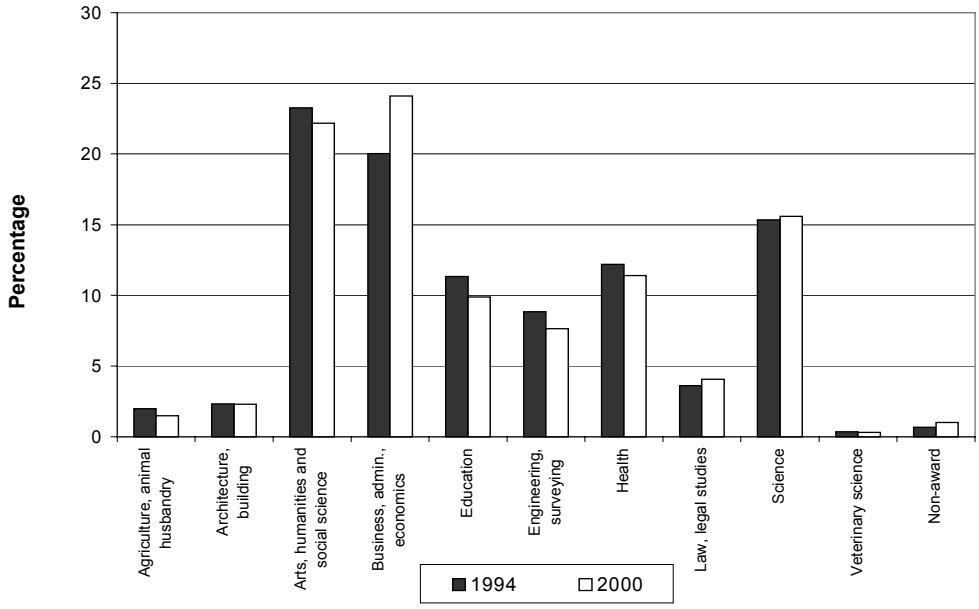
The research also found that students with non-English-speaking backgrounds were consistently more likely to participate in higher education, while young people living in non-metropolitan areas were less likely to participate. In addition, the research indicated that the association between participation in higher education and an individual's occupational background, school type and achievement level has become weaker.

Higher education courses

As shown in figure 6, there has been relatively little change in the proportion of students undertaking the different fields of study offered by higher education in Australia between 1994 and 2000. One exception was the increase in participation in business, administration and economics courses (up four percentage points). This resulted in these courses comprising the greatest proportion of students of any field in 2000. This increase was offset by slight proportional declines in a number of other fields.

In 2000, almost three-quarters (73%) of students were undertaking studies in one of four main fields of study: business, administration and economics; arts, humanities and social science; health; and science.

Figure 6: Equivalent full-time higher education students by field of study, Australia, 1994 and 2000 (%)



Source: Selected higher education statistics from DEST

Bachelor degree and other undergraduate courses remained the highest proportion of higher education enrolments, comprising over three-quarters (77.7%) of all higher education student enrolments in 2000. While student enrolments in such courses increased between 1994 and 2000, the resulting proportion of students declined marginally from 78.6% in 1994.

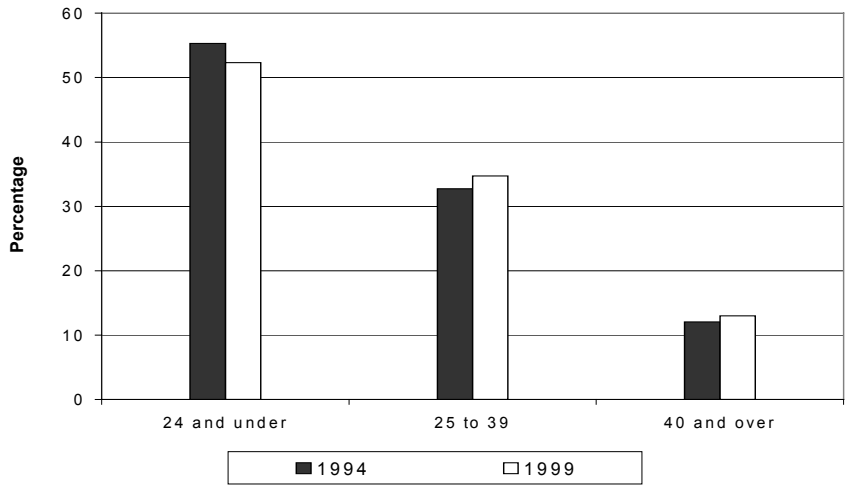
More students study at higher education institutions full time than part time, with just over 60% studying full time in 2000. While this proportion has remained relatively stable over recent years, it has increased marginally since 1994.

Outcomes from higher education

Not surprisingly, the largest proportion of higher education students completing award courses are those aged 24 years and less. While the actual number of student completions from this age group have increased since 1994, the proportion of total student completions aged less than 25 has declined, from 55.2% in 1994 to 52.3% by 1999. This decline has been offset by proportional increases of older students completing higher education award courses (figure 7).

There has been little change in the proportion of male and female students completing award courses over the period 1994 to 1999.

Figure 7: Higher education award course completions by age group, Australia, 1994 and 1999 (%)



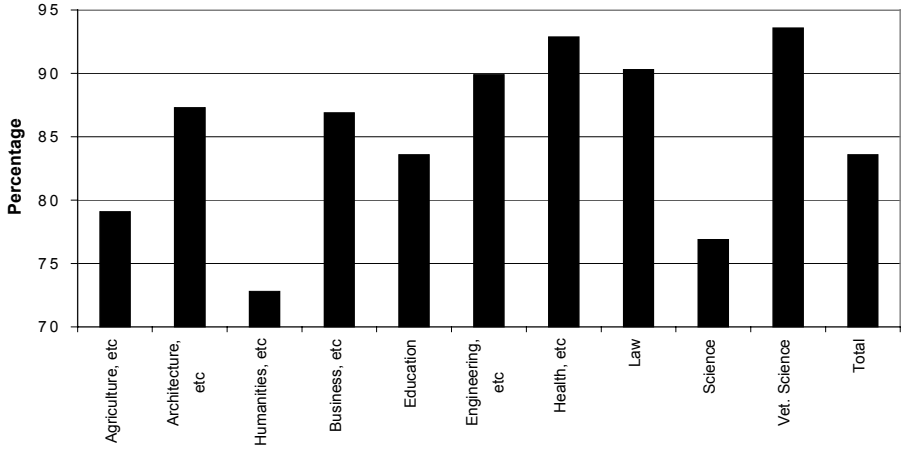
Source: Selected higher education statistics from DEST

Of all 1999 bachelor degree graduates, one in four (24.2%) were in full-time study in May 2000 while just under two-thirds (65.4%) were in, or seeking, full-time employment.

In general, bachelor degree graduates appear to have very good employment outcomes after their course. Of those available for full-time employment, around 84% of 1999 graduates were in full-time employment in May 2000, while less than 7% were not in any form of employment.[1]

As shown in figure 8, the proportion of 1999 bachelor degree graduates available for full-time work who had found full-time employment varied depending on the graduates' field of study. Those fields of study resulting in higher employment outcomes included veterinary science, health-related fields including medicine, law, and general engineering. The lowest employment outcomes came from humanities and related fields, and agriculture.

Figure 8: Bachelor degree graduates in full-time work, May 2000 (% of those available for full-time work)



Source: Data supplied from the Graduate Careers Council of Australia

Of 1999 bachelor degree graduates available for full-time employment, just under one in ten (9.7%) was in part-time work in May 2000 but seeking full-time employment. Fields of study

[1] Based on those bachelor degree graduates who were in, or seeking, full-time employment at the time of the survey.

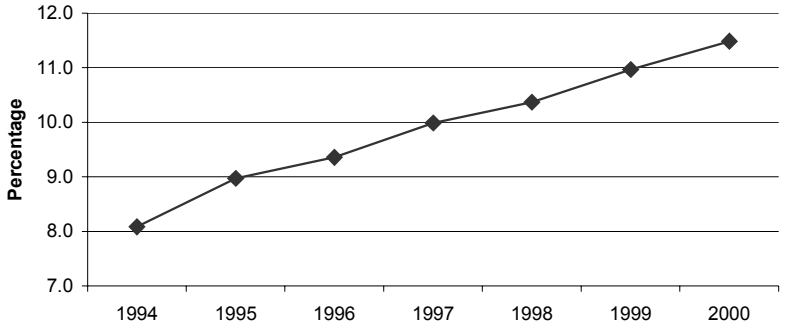
with high proportions of such graduates included the humanities and related fields (16.7%), the sciences (12.5%), and agriculture (11.8%).

Vocational education and training

Vocational education and training offers people a wide choice in gaining a variety of qualifications (from statements of attainment to bachelor degrees) and is available across Australia at a number of locations (including TAFE institutes and schools) and online.

The number of vocational education and training students in Australia has grown markedly in recent times, from 1.13 million students in 1994 to almost 1.75 million in 2000 (up 55%). This growth in student numbers has been stronger than the growth in Australia's population aged 15 years and over and has resulted in participation levels rising from 8.1% in1994 to 11.5% by 2000[2] (figure 9).

Figure 9: Participation in VET of Australia's population aged 15 years or more, 1994–2000 (%)



Source: *Australian Demographic Statistics*, ABS cat. no. 3101.0; National VET Provider Collection, National Centre for Vocational Education Research (NCVER)

While males dominated VET in the past, the gap in proportion of males to females has been narrowing. By 2000, the proportion of males and females reached 51% and 49%, respectively.

VET in Australia has experienced marked growth among older students in recent years. As shown in table 12, the greatest growth in student numbers between 1994 and 2000 occurred in the 40-years-or-more age group, from 233 600 to 529 200 (up 127%) at an annual rate of 14.6% over the period. This compares with a rate of growth in total students of 7.5% per annum.

Growth among young people (those aged 24 years or less) has been slower over the period 1994 to 2000, with the annual rates of growth for students aged 19 years and less and students aged 20 to 24 being 5.6% and 3.1%, respectively. Nevertheless, students aged less than 25 years still made up over 38% of all VET students in 2000. This proportion has declined slightly from the 45% in 1994.

[2] Based on the number of VET students aged 15 to 64 years as a percentage of Australia's population aged 15 to 64.

Table 12: VET students by age group, Australia, June 1994 and 2000

	1994	2000	Total growth 1994 to 2000	Annual rate of growth[(a)]
	('000)	('000)	(%)	(%)
Ages 19 and under	283.7	392.8	38.5	5.6
Ages 20–24	228.8	274.3	19.9	3.1
Ages 25–39	385.5	553.0	43.5	6.2
Ages 40 and over	233.6	529.2	126.6	14.6
Total	**1131.5**	**1749.3**	**54.6**	**7.5**

Note: [(a)]The annual growth rates shown are compound growth rates.

Source: National VET Provider Collection, NCVER

In general, older people undertake vocational courses for reasons unrelated to employment; however, this is not always the case. Ball (1999) found that about 20% of males continue to work past 65 years of age and over half of all men who continue to work past 65 years of age are still working at 75 years of age.

The distribution of VET students across Australia's States and Territories is similar to each State and Territory's share of Australia's population aged 15 years and more. However, there has been a notable increase over recent years in New South Wales, from 33.6% of all students in 1994 to 36.6% in 2000. This appears to be primarily at the expense of Victoria's share, which decreased from 29.3% in 1994 to 26.8% in 2000.

While minor variation has occurred, there is little difference in the proportion of VET students living in the various geographic regions of Australia (that is, capital city, rural, remote, etc.) in 2000 compared with those of 1994.

VET courses

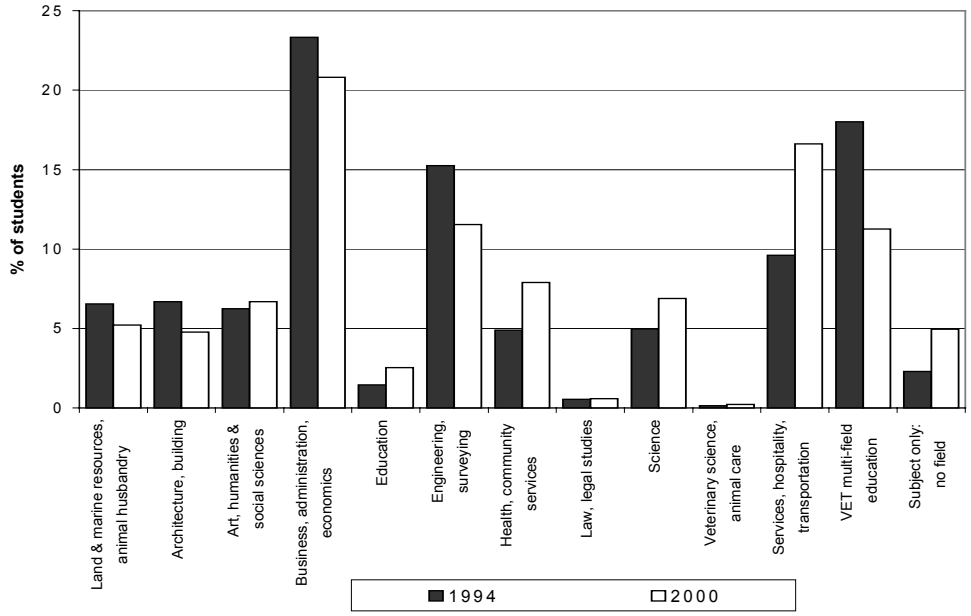
Those fields of study attracting the most students in 2000 were business, administration and economics (364 000 students); services, hospitality and transport (291 000); and engineering (202 000), which together accounted for almost half (49%) of the total 1.75 million students. It should be noted, however, that course classifications do not always allow for ready identification of participation in information and communication technology training, which is known to have grown considerably.

Figure 10 shows the change in student share of courses between 1994 and 2000. The biggest increase, in terms of student share, occurred for courses in the services, hospitality and transportation fields. Such courses increased their share from 9.6% of students in 1994 to 16.6% in 2000. The next highest proportional increase occurred for courses in health and community services, which increased their student share from 4.9% in 1994 to 7.9% in 2000. These increases correlate, to some degree, with the increased employment since the mid-1990s in the health and community services, and the accommodation, cafe and restaurant industries.

Student share declined for several fields of study including VET multi-field education, which includes many preparatory and language courses, and engineering and surveying. These declines correlate, to some degree, with the declining employment share of trades and related occupations and the increasing employment share of professional occupations.

The average number of hours undertaken by VET students in a year appears to have declined, from 231 hours in 1994 to 198 hours in 2000. This amount varies according to a student's age, subject choice, and qualification.

Figure 10: VET students by field of study, Australia, 1994 and 2000 (% of students)



Source: National VET Provider Collection, NCVER

Table 13 shows the qualifications being undertaken by VET students in 1994 and 2000. It appears that most of the growth in vocational education and training within recognised qualifications has been at AQF certificate III or equivalent. Unfortunately, it is not appropriate to compare directly the changes between 1994 and 2000 owing to classification changes between these years. However, research by NCVER into actual AQF equivalent of unknown qualifications reported in 1994, indicated that the greatest growth may actually have occurred at AQF certificate II.

There is, however, enough evidence from the data in table 13 to suggest there has been stronger growth in recognised qualifications (that is, AQF and equivalent) than non-recognised (for example, statements of attainment etc.).

Table 13: Number of VET students by qualification, 1994 and 2000, Australia ('000)

	1994 ('000)	**2000** ('000)
AQF diploma or higher	167.1	199.6
AQF certificate IV or equivalent	106.1	173.5
AQF certificate III or equivalent	100.8	347.7
Unknown qualifications corresponding to AQF qualification	285.4	32.0
AQF certificate I and II; AQF senior secondary	n/a	391.1
Other	472.1	605.4
Total	**1131.5**	**1749.4**

Source: National VET Provider Collection, NCVER

It should also be noted that the vast majority (around 90%) of people undertaking vocational education and training do so on a part-time basis.[3] This is in contrast to higher education where the majority (around 60%) study full time.

[3] A student's status as full time is based on the number of hours of training reported, with those students who undertake more than 540 hours of training considered to be full time.

VET outcomes

In terms of subject outcomes, of the 9.08 million subjects assessed across Australia in 2000, a very high percentage (around 9 in 10) resulted in a successful outcome.[4]

Commensurate with the increase in student numbers, the number of qualifications issued in Australia has also increased. In 1994, around 192 000 qualifications were issued. By 2000, this number had grown to almost 335 000.

The increase in the proportion of older Australians undertaking VET has already been noted. It is therefore not surprising to see an increase in the proportion of qualifications being issued to older students. In 1994, around 21% of qualifications were issued to students aged 40 years or more. By 2000, this proportion had increased to over 26%. By contrast, the proportion issued to people aged less than 25 years of age has declined slightly, from just over 43% in 1994 to just under 42% in 2000.

While not all people undertaking study at TAFE do so for vocational reasons,[5] employment outcomes for TAFE graduates[6] generally appear very good. Almost three-quarters (73.4%) of 2000 graduates were employed at the end of May 2001 and around nine out of ten were either employed or undertaking further study. In addition, TAFE graduates appeared to improve their employment situation after completing their course. While two-thirds (66.6%) were employed in the six months prior to commencing their course, almost three-quarters (73.4%) were employed six months after completing their course.

These results differed slightly across age groups, with a lower proportion of older persons in employment or in further study after completing their course. However, older persons were also more likely to be undertaking the course for non-vocational reasons. There was little difference between those living in capital cities and those living outside capital cities.

Vocational education can also facilitate career changes and career advancements. For TAFE students graduating in 2000, one in four (24.6%) moved into occupations requiring higher skill levels. This figure varied considerably with age, with a far greater proportion of young people (less than 25 years) moving into higher skill occupations (35%) than persons aged 40 years or more (13%). In addition, people from capital cities appeared more likely to move into higher skilled occupations after completing their course, but only slightly.

Graduates were generally satisfied with the overall quality and provision of their training. Eight in every ten graduates (79.9%) indicated that their training helped them wholly or partly to achieve the main reason for undertaking their training. While similar ratings were given by people of different ages, those residing outside capital cities gave slightly higher ratings on average than those from capital cities.

Almost two-thirds (73.7%) of all 2000 graduates indicated their main reason for undertaking the training was for vocational or work-related reasons. In addition, almost two-thirds (64.1%) of graduates saw at least one employment-related benefit from their training and they rated the overall quality of their training at about eight out of ten.

There has been a number of studies evaluating the outcomes for particular groups of Australians from VET (Ball 1998; Ball & Phan 1999; Ball & Lamb 2001; Phan & Ball 2001). The key findings from these studies are summarised below:

- Subject outcomes from VET, nationally, were influenced by demographic factors. In particular, the probability of subject success or completion was significantly reduced for people of Aboriginal and Torres Strait Islander descent, people reporting disabilities, young people, people from a non-English-speaking background, and the unemployed (Ball 1998).

4 Includes subjects which resulted in a pass or recognition for prior learning was granted.

5 Just over one-quarter (26.3%) of 2000 graduates indicated their main reason for undertaking training was for non-vocational reasons.

6 TAFE graduates are defined as those students who have successfully completed a full course of study.

- ✧ The likelihood of a TAFE graduate securing employment after graduation and level of income are influenced by the field of study and qualification attained. In addition, demographic factors are also significant in determining labour market outcomes. Other things being equal, members of disadvantaged groups achieve poorer labour market outcomes after graduating from TAFE than the outcomes achieved by other Australians (Ball & Phan 1999).
- ✧ The likelihood of members of disadvantaged groups securing employment after graduation is further reduced because of the effects of field of study, qualification attained, and occupation. Members of disadvantaged groups are more likely to have taken lower level courses at TAFE and be employed in lower skilled occupations compared with other TAFE graduates (Ball & Phan 1999).
- ✧ Subject outcomes for school non-completers vary. Subject failures were lowest in subjects undertaken more often by students who performed well at school compared with those who did not perform well; by those from English-speaking rather than from non-English-speaking backgrounds; and by students from high socio-economic backgrounds compared to students from low socio-economic backgrounds. However, the differences in success rates between high and low socio-economic background groups were small, in the light of differences in school success rates of the two groups (Ball & Lamb 2001).
- ✧ Outcomes for students who enrolled in lower level preparatory or enabling courses were influenced by demographic factors. Following enrolment in an enabling course, it was identified that almost a third of those who undertook further studies in VET had undertaken a course at a higher qualification. There was also a large proportion of students enrolling in the same qualification as that undertaken the previous year. Many of these students diversified into other areas of learning. Nonetheless, the study identified that there were some students who re-enrolled in the same enabling course in the following year. These students were more likely to be women, students with a disability, students from a non-English-speaking background, and students whose highest level of secondary schooling was Year 9 or below (Phan & Ball 2001).

Apprenticeships and traineeships

Apprenticeships and traineeships in Australia have been growing, both in actual numbers and in recognition as an important part of Australia's skill base. Since the mid-1990s, Australia has experienced substantial growth in apprenticeships and traineeships, with numbers more than doubling, from 136 000 in June 1995 to almost 280 000 by June 2000.[7] As a result, 2.1% of Australia's working-age population was employed in an apprenticeship or traineeship in June 2000. This compares with only 1.1% in June 1995.

Historically, Australia's apprenticeship system has been dominated by young males employed in the skilled trades. However, this situation has changed dramatically since the mid-1990s. Whereas males comprised 83% of apprentices and trainees in June 1995, their share had decreased to 66% by June 2000.

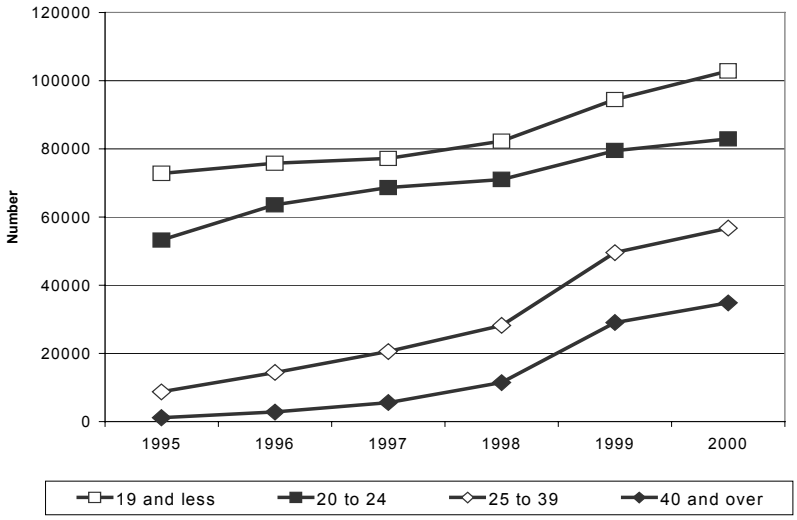
While growth in apprenticeship and traineeship numbers has occurred across all major age groups, the share of total apprentices and trainees made up by young people (less than 25 years) has declined from 93% in 1995 to 67% in June 2000. This is a direct result of the Australia-wide abolition of age restrictions for apprenticeships and traineeships introduced in 1992.

On the other hand, the number and resultant proportion of older apprentices and trainees has grown substantially in recent years. As shown in figure 11, this has been particularly noticeable since the introduction of new apprenticeships in 1998.

This does not mean that young people are missing out. In fact, the number of teenagers in the system rose to over 100 000 in June 2000, which was by far the highest level ever seen in the Australian apprenticeship system. Opening up the system to older people has become crucial. Australia's population is rapidly ageing and the young can no longer be considered the sole source of entry-level skills to new and emerging occupations in the labour market.

7 As of June 2001, there were almost 320 000 apprentices and trainees.

Figure 11: Number of apprentices and trainees in training by age group, Australia, June 1995–2000



Source: National Contracts of Training Collection, September 2001, NCVER

While the number of apprentices and trainees employed in skilled trades and related occupations continues to grow, the impact of introducing traineeships in the 1980s finally became felt in the mid-to-late-1990s with the occupational base of the system expanding outside the traditional trades. As a result of this expansion, a considerable reduction in the proportion of skilled trade apprenticeships has been observed, from almost 90% of all apprenticeships and traineeships in 1995 to less than half by June 2001.

Substantial growth occurred in the clerical sales and service occupations between 1995 and 2000. This group also experienced more proportional growth than any other major occupational group, rising from 7% of all apprenticeships and traineeships in June 1995 to 30% by June 2000.

This change in occupational profile of Australia's apprenticeship and traineeship system is reflected in the changes seen in the qualification profile. Traditionally, Australia's apprenticeship system was focussed on trade certificate or equivalent qualifications; that is, certificate III or equivalent qualifications. While the vast majority (75%) of apprentices and trainees were undertaking AQF certificate III or equivalent qualifications in June 2000, the proportion has declined markedly from the 92% in 1995. On the other hand, the proportion of apprentices and trainees at AQF certificate II increased from 7% in 1995 to nearly 21% by June 2000. In addition, an increase in the proportion of AQF certificate IV and above qualifications has been evident, from less than 1% in 1995 to almost 4% in June 2000.

However, this does not mean that AQF certificate IIIs are diminishing from the apprenticeship system. AQF certificate III or equivalent qualifications have increased markedly in actual numbers, rising by almost 94 000 between 1995 and 2000. By comparison, AQF certificate II qualifications rose just over 48 000, and AQF certificate IV and diplomas just over 10 000.

Thus, contrary to popular belief, diversification in Australia's apprenticeship and traineeship system has not been at the expense of apprenticeships in the skilled trades nor certificate III qualifications. Apprenticeships and traineeships have grown across all occupational groups and AQF qualifications (except certificate I) since the mid-1990s. Far from being a problem, this broadening of the occupational and qualification base of apprenticeships and traineeships has been both desirable and necessary to keep apace with a changing labour market.

Apprenticeship and traineeship outcomes

The proportion of apprentices and trainees who were employed in unsubsidised employment three months after successfully completing their apprenticeship or traineeship in the 12 months ending June 2000 was around 93% (NCVER 2001). This includes retention in the occupation in which they undertook their apprenticeship or traineeship, or employment in a new job and/or with a new employer. By contrast, around 70% of apprentices and trainees who left their apprenticeship or traineeship without completing it in 2000 were employed in an unsubsidised job three months after cessation.

This suggests the benefits are far greater if people complete their apprenticeship. In fact, as shown by Grey, Beswick and O'Brien (1999), employment benefits increase the longer people stay in their contract of training, even if they do not finish their full apprenticeship or traineeship.

Recent research by NCVER[8] examined the employment outcomes of different groups of Australians in apprenticeships and traineeships. The results suggest that, in general, apprenticeships and traineeships provide very positive employment outcomes for people who identified themselves as belonging to a disadvantaged group. In fact, the only group who didn't fare well were people who reported they speak a language other than English.

Employer views

Table 14 shows employers surveyed in 2001 were generally satisfied with the skills of their vocational education and training graduates.[9] In particular, employers were impressed by graduates' work ethic (90%) and their professional approach to work (76%). Employers were also quite satisfied with the graduates' ability to use current technology in the workplace (70%).

Although employers were least satisfied with the graduates' computer skills (51%), computer skills were not the highest priority for improvement. Employers are more interested in seeing improvements to generic skills, with the ability of graduates to use their initiative (15%), oral communication skills (13%), and a professional approach to work (13%) being the highest priority (table 14).

Table 14: Employer satisfaction with VET graduates' skills and highest priority for improvement, 2001 (%)

Graduates' skills	% very or quite satisfied	% rating skill as highest priority for improvement
Oral communication skills	76	13
A professional approach to work	76	13
Problem-solving skills	68	12
The ability to use their initiative	68	15
Practical job skills	75	11
The ability to work as part of a team	79	7
Computer skills	51	5
The ability to adapt to changes in the workplace	69	5
A positive attitude towards work	77	9
The ability to work with minimal supervision	74	5
The ability to use current technology in the workplace	69	4
Work ethic	90	na

Source: 2001 Survey of Employer Views on VET, NCVER

8 Ball, K & Phan, O (unpublished)

9 Based on NCVER Survey of Employer Views, which seeks responses from a sample of employers about their level of satisfaction with various aspects of vocational education and training.

Overall, as shown in table 15, employers were satisfied with course delivery. Around three-quarters of employers (78%) were very satisfied with the relevance of the course content.

Alongside interest in generic skills, employers also viewed practical skills as important. Although the majority of employers were satisfied with the relevance of the course content, they also viewed course content as being the most in need of improvement (29%). Balance of theory and practice (26%) and teacher industry experience (20%) were other areas where employers felt there was a need for improvement (table 15).

Table 15: Employer satisfaction of VET delivery and highest priority for improvement, 2001 (%)

Course delivery	% very or quite satisfied	% rating aspect highest priority for improvement
Relevance of course content	78	29
Balance of theory and practice	70	26
Method of assessment	67	14
Teacher ability	67	10
Teacher industry experience	64	20

Source: 2001 Survey of Employer Views on VET, NCVER

Most employers were also of the view that training pays for itself through increased worker productivity, with around three in four (74%) employers employing a recent vocational education and training graduate feeling that the training undertaken paid for itself through increased productivity.

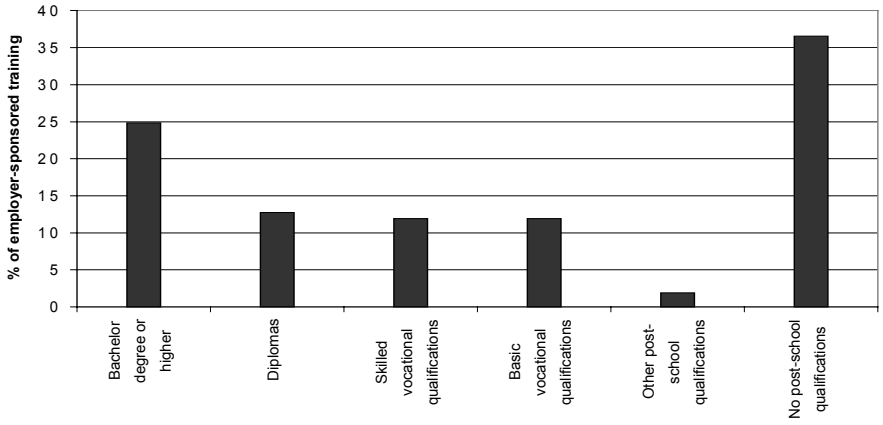
Enterprise-sponsored training

In 1997, more people with post-school qualifications undertook enterprise-sponsored training than without post-school qualifications. In fact, almost two-thirds (63.4%) of enterprise-sponsored training in 1997 was by people with post-school qualifications.[10] Similar proportions were identified for in-house training and for training outside the workplace. Of all enterprise-sponsored training, people with bachelor degrees or higher comprise the highest proportion of those with post-school qualifications, while people with some sort of vocational qualification comprise less than a quarter (figure 12).

Not all employers provide training for their employees. The Australian Bureau of Statistics estimated that 61% of all employers in 1997 provided some form of training for their employees. A lower proportion provided structured training (35%), while a higher proportion provided unstructured training (53%). However, the vast majority (92%) of Australia's employees worked for an organisation that provided some form of training in the 12-month period.

[10] Includes all training by those employees who indicated they had completed one or more training courses in the 12 months prior to the survey.

Figure 12: Educational attainment of employees undertaking enterprise-sponsored training,[(a)] 1997 (%)



Note: [(a)]Includes all training by those employees who indicated they had completed one or more training courses in the 12 months prior to the survey.

Source: Unpublished data supplied by ABS from the 1997 Survey of Education and Training

Impact of Australia's ageing population

It is well recognised that Australia's population is ageing. Skill formation strategies for the future must therefore take this into account.

We can predict to some extent what the level and age structure of the population will look like in 20 years time. This is shown in table 16 and is based on the assumption of similar mortality rates and net patterns of immigration as today.

Table 16: Expected change in Australia's population, 2000–01 to 2020–21

Age group (years)	Population			Proportion of population	
	2000–01 *('000)*	2020–21 *('000)*	Increase *(%)*	2000–01 *(%)*	2020–21 *(%)*
0–14	3 921.3	3 946.5	0.6	20.5	17.1
15–24	2 709.9	2 855.1	5.4	14.1	12.4
25–39	4 393.8	4 778.9	8.8	22.9	20.8
40–59	4 991.4	6 051.6	21.2	26.1	26.3
60 and over	3 140.6	5 395.0	71.8	16.4	23.4
Total	**19 157.0**	**23 027.2**	**20.2**	**100.0**	**100.0**

Source: Unpublished data supplied by ABS; Econtech *2001 MM2 Murphy Model*

Australia's population is projected to grow by just under 1% per year over the next 20 years. Most of this growth is expected to occur in the over 40-year-old age group, with those ages 60 years and over expected to increase by almost 3% per year over the next 20 years. Population growth in the under-25-year-olds is expected to be almost stagnant, resulting in a falling share of young people in Australia's population.

This pattern of an ageing population will have a marked impact on student numbers in the future. For instance, the likely impact on student numbers, assuming constant participation rates for each age group over the next 20 years, is shown in table 17.

Looking first at the VET sector, if VET participation rates for each age group do not change, the aggregate VET participation rate would actually fall from the 11.4% of 2000 to 10.3% in 2020. This would imply a very sluggish growth rate in VET of only 0.6% each year for the next 20 years.

Table 17: Impact of the ageing population on tertiary student numbers in Australia if participation rates in each age cohort remains constant

Age group (years)	No. of students ('000)				Participation rates (%)			
	VET		Higher education		VET		Higher education	
	2000	*2020*	*2000*	*2020*	*2000*	*2020*	*2000*	*2020*
15–24	658.7	694.0	422.6	445.2	24.3	24.3	15.6	15.6
25–39	553.0	601.5	198.0	215.4	12.6	12.6	4.5	4.5
40–59	460.3	558.1	72.5	87.9	9.2	9.2	1.5	1.5
60 and over	68.9	118.3	2.3	4.0	2.2	2.2	0.1	0.1
Total [(a)]	**1740.9**	**1971.9**	**695.5**	**752.6**	**11.4**	**10.3**	**4.6**	**3.9**

Note: [(a)]The aggregate participation rate is the total number of students as a proportion of the population aged 15 years or more.

For higher education, if participation rates for each age group do not change, the aggregate participation rate would also fall, from 4.6% in 2000 to 3.9% in 2020, implying a growth rate of only 0.4% each year for the next 20 years.

These trends would mean that the age profile of Australia's total tertiary students would change over the next 20 years such that the proportion of all tertiary students aged 40 years and over would increase from 24.8% in 2000 to 28.2% by 2020 (table 18). While people under the age of 25 years would still be the largest group of tertiary students, their relative share would fall from 44.4% to 41.8%.

Table 18: Profile of tertiary students in Australia if participation rates in each age cohort remain constant

Age group (years)	VET (%)		Higher education (%)		Total tertiary (%)	
	2000	2020	2000	2020	2000	2020
15–24	37.8	35.2	60.8	59.2	44.4	41.8
25–39	31.8	30.5	28.5	28.6	30.8	30.0
40 and over	30.4	34.3	10.8	12.2	24.8	28.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

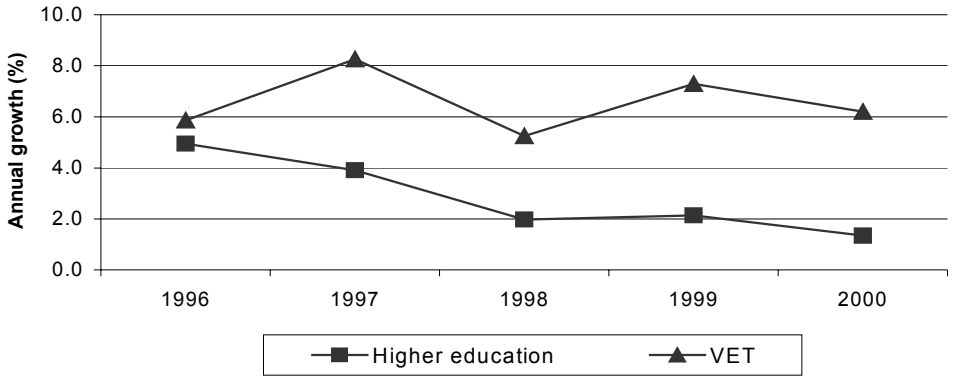
For aggregate VET and university participation rates to remain constant instead of falling, the number of students would need to increase. Overall, VET student numbers would have to grow from 1.74 million to 2.18 million by 2020 to maintain the current VET participation rate of 11.4%. University student numbers would need to rise from 695 000 to 871 000 by 2020 to maintain its 2000 participation rate of 4.6%. With little increase expected in the number of people aged 25 years or less in Australia's population over the next 20 years, it seems logical to assume the majority of the increase will need to come from Australia's older population.

Of course, the question needs to be asked about how realistic it is to assume that participation rates in each age group or aggregate participation rates will remain constant in the future.

In answering this, it is important to consider the increases in VET student numbers over the past decade.[11] While annual growth has fluctuated throughout the 1990s, student numbers in the VET sector have been growing at a rate of around 6% to 7% per annum since the beginning of 1995 (figure 13).

[11] It should be noted that the growth observed between 1990 and 2000 may have been affected by changes in scope of the national VET collection during the period.

Figure 13: Annual rate of student growth in Australia's tertiary sector, 1996–2000



Source: Selected higher education statistics from DEST; National VET Provider Collection, NCVER

A slightly different situation exists for the higher education sector. Growth in university student numbers over the 1990s has been more modest than that in VET.

As seen in figure 13, higher education has experienced an apparent decline in annual growth in recent years, with growth declining from 5% per annum in 1996 to just 1.3% in 2000. This trend suggests, therefore, that while student numbers will increase, the rate of participation among Australia's population will most likely fall.

In other words, despite increasing student numbers, the rate of participation in VET will, at best, remain at around 11% per annum. As discussed earlier, for existing participation rates to be maintained in the future, the VET sector will require an influx of older Australians. Other issues such as access to appropriate funding and resources will also impact on the ability of the sector to maintain existing growth levels.

By contrast, while student numbers will increase in higher education, rates of participation within the sector are most likely to decline. Of course, such forecasts do not take into account intervention by government and other policy-makers. It can be expected that some sort of action will be taken in the future to maintain or increase participation rates. Appropriate levels of funding and ready access to available resources by training institutions and providers will also play a key part in allowing the sector to sustain or improve participation rates.

However, one thing is certain, Australia's population is ageing, and the demographic changes arising from this must have an effect on the structure of the tertiary student population and the approach to delivery for both the VET and university sectors in the future.

International comparison

Australia isn't the only country facing challenges arising from a changing labour market and an ageing population. International comparisons suggest that most countries are struggling to keep up with rapid technological and demographic changes, albeit to varying degrees. If we consider relative participation rates in education, Australia's position varies considerably depending on which segment of the population and which level of education we are considering.

As shown in box 1, overall participation of 15 to 19-year-old Australians in all forms of education is 80.3%, just above the OECD average of 76.9%. Australia ranks thirteenth out of the 29 OECD countries.

A different situation applies for the 20 to 29-year-olds. The education participation rate in all forms of education and formal training of Australia's 20 to 29-year-old population is 27.3% compared with an OECD average of 20.7%. Australia ranks sixth out of the 29 OECD countries (box 1).

In terms of participation in education and formal training, for people aged between 30 and 50 years of age, Australia is a world leader. For instance, Australia ranks equal second among the 29 OECD countries in participation of 30 to 39-year-olds, and first for those aged 40 years and over. In both cases, participation exceeds the OECD averages (box 1).

It should be noted, however, that these participation rates include students studying part time, and Australia has a higher incidence of part-time students than most countries, particularly amongst older persons.

In terms of tertiary education, approximately 4.3% of Australia's population aged 15 years and over enrol in university courses. While direct international comparison is not possible because of the use of different educational classifications and terminology within individual countries, Australia appears to rank highly amongst OECD countries.[12]

Around 10% of Australia's population aged 15 years and over undertake a VET program. However, Australia's VET system is unique and it is not possible to compare VET participation internationally. This is because components of VET fall into a number of ISCED-97 (International Standard Classification of Education) classifications, from ISCED 2 (lower secondary education) to ISCED 5 (tertiary education).

While Australia appears to have relatively high levels of participation, especially amongst older people, it has not translated into comparatively high levels of educational attainment. The exception is the attainment of university-level qualifications where Australia ranks equal fifth among the 29 OECD countries, as shown in box 2. Some 18% of the Australian population aged 25 to 64 years possess university qualifications at degree level or higher, compared with an OECD average of 14%.

[12] Based on data from OECD 2000a/b and CIA 1999

Box 1: Australia's comparative position within the OECD in education and training participation

Participation in school education, vocational education and higher education and training institutions[(a)]

15 to 19-year-olds

- Australian participation rate is 80.3%.
- OECD average is 76.9%.
- Australia ranks 13th out of the 29 OECD countries.

20 to 29-year-olds

- Australian participation rate is 27.3%.
- OECD average is 20.7%.
- Australia ranks 6th out of the 29 OECD countries.

30 to 39-year-olds

- Australian participation rate is 14.0%.
- OECD average is 4.8%.
- Australia ranks equal 2nd out of the 29 OECD countries.

40 years and over

- Australian participation rate is 6.0%.
- OECD average is 1.1%.
- Australia ranks 1st out of the 29 OECD countries.

Note: [(a)]Includes both full-time and part-time students.

Source: OECD (2001, p.134)

Box 2: Australia's comparative position within the OECD in the educational attainment of the population[(a)]

Educational attainment of the population aged 25 to 64 years of age

Upper secondary education attainment is highest level:[(b)]

- Australian rate is 31%.
- Average OECD rate is 36%.
- Australia ranks equal 18th out of the 29 OECD countries.

Tertiary vocational education (ISCED 5B) is highest level of education attainment:[(c)]

- Australian rate is 9%.
- Average OECD rate is 8%.
- Australia ranks approximately 15th out of the 29 OECD countries.

Degree or higher is highest level of educational attainment:[(d)]

- Australian rate is 18%.
- Average OECD rate is 14%.
- Australia ranks equal 5th out of the 29 OECD countries.

Notes: [(a)]Information presented here is based on the International Standard Classification of Education (ISCED-97). It should be noted that it is not always possible to isolate educational attainment within Australia to specific ISCEDs.
[(b)]Excludes short upper secondary (i.e. ISCED 3C short programs).
[(c)]Includes practical or occupationally specific programmes that provide participants with a qualification of immediate relevance to the labour market (i.e. ISCED 5B programs). Tertiary vocational education in an international context relates to undergraduate diploma level study in Australia.
[(d)]Includes advanced research qualifications such as PhDs and more theoretical programmes that give access to advanced research programmes and to professionals with high general skills requirements (i.e. ISCED 5A/6 programs).

Source: OECD (2001, pp.43, 45)

In terms of tertiary vocational education,[13] Australia has an attainment rate (9%) just above the OECD average (8%). Australia ranks somewhere in the middle of the 29 OECD countries (box 2).

[13] Tertiary vocational education in an international context relates to undergraduate diploma level study in Australia.

Australia's performance is below the OECD average in terms of comparative rates of upper secondary educational attainment, ranking eighteenth out of the 29 OECD countries, with a rate of 31%. The OECD average is 36% (box 2).

The mixed performance in secondary educational attainment translates to an overall educational attainment in Australia lower than the OECD average. Some 57% of the population aged 25 to 64 years have finished upper secondary education as their highest level of educational attainment, compared with an OECD average of 62%. Australia ranks equal seventeenth out of the 29 OECD countries (OECD 2001).

Implications for the future

The requirements for skills in Australia are changing rapidly, reflecting the economic and social impacts of developments in Australia's economy and the world. As Australia transforms the basis of its economy from traditional industry to one based on knowledge industries and on innovation, the types of skills now required have evolved from a relatively narrow range of technical and job-related competencies to a far broader range of generic and transferable skills.

This change is not confined to any one sector of the economy, but rather will have an impact across the whole economy and most, if not all, occupational areas. The need for training and skills formation strategies to change is therefore wholesale across all education and training delivery, public and private.

On the demand side, rapid technological change and globalisation are exerting a substantial impact on changing the type of skills required in Australia's workforce. These changes include:

- A shift in many, if not most, jobs away from low-level skills to higher level skills in line with a changing labour market. There can be no doubt that Australia's future will depend more and more on the efficiency with which it can develop higher level skills to take advantage of emerging opportunities. As a result, people can no longer rely on basic schooling or basic vocational skills to gain entry to the labour force; post-school qualifications have become important for lifetime employment.
- The need for employees to gain higher order cognitive and generic skills to enable them to perform in a complex modern working environment. These skills include highly developed analytical and research skills as well as interpersonal and human relations skills, networking and negotiation skills, computer skills and so forth.

There are many factors influencing the strong trend in skill demand including:

- advances in technology, particularly the convergence of information and communication technologies
- transformation of the labour market, including the increasing importance of service industries which has led to increases in casualisation and part-time employment, which is often mixed with study
- demographic changes, with the Australian workforce rapidly ageing. It is estimated that by 2010, nearly half the population will be aged over 45 years. People are living longer and an increasing number are remaining in the workforce

On the supply side, the key challenge is to develop skill formation systems that are able to change and reinvent themselves to meet the rapidly changing requirements in ways that have never been required in the past. Flexibility and responsiveness to the diverse needs of employers and learners will also be a key issue.

At the same time, there needs to be an understanding of the implications of Australia's rapidly ageing population. Employers will not be able to count on meeting their skill requirements through the recruitment of younger workers and will need to consider re-training existing workers, including older persons, to generate the skills they need.

These changes mean that Australia needs to re-think about the ways in which education and training are provided. With post-school qualifications becoming more and more important to gaining lifelong employment, greater numbers of people are undertaking study combined with some form of employment. In addition, people at different stages of life have different training requirements, in terms of the amount, type, and nature of training. This needs to be considered in future training delivery. For example, many young people have part-time jobs while studying

for their main career qualification. In addition to their main study, they will require some training to undertake the part-time job. Also, many people already in the workforce will need to upgrade their skills or wish to retrain in order to take up new and different occupations.

Australia is unique in the numbers of people who combine work and study. Our public education and training institutions are accustomed to providing learning opportunities that combine with working hours and working demands. Nevertheless, this trend is intensifying and the capacity of public institutions to provide solutions to employers and to individuals wishing to upgrade skills will be of increasing importance. There is some evidence to suggest that public provision, particularly in higher education, is more geared to providing opportunities to individuals wishing to change jobs rather than to those wanting to upgrade skills for their existing work.

In addition, institutional delivery is not well set up to allow people to move between sectors and between institutions within sectors. The combined work and study option adopted by many Australians, including young people, means that traditional front-end training may increasingly give way to lifelong learning. This is where study is undertaken for shorter periods over time (and often in different places), placing a premium on improved articulation and portability of education and training already undertaken. Such patterns are evident in adult participation in education and training, particularly in vocational education.

Employer-sponsored and work-based training opportunities also need to be understood as critical contributors to skill formation strategies. As yet, little is known about the impact and incidence of these strategies across industry.[14]

Different responses are needed between sectors and between enterprises and institutions. In vocational education, there is a need to give greater recognition to the needs of some students to complete courses and gain qualifications. In higher education, the development of pathways and links to enterprises could be enhanced.

Developing better approaches to skill formation may also require consideration of measures beyond the actual provision of education and training; for example, access to career guidance and information for all people to enable them to navigate their way through the rapidly changing nature of work.

Most information services are geared to the needs of school leavers or students on exit from universities. Services which focus on adult career education and training needs, or brokerage services, are less in evidence and their provision is worthy of further consideration.

Finally, to facilitate change in delivery strategies and skills upgrading among older workers, across a range of providers and over a working life, institutional funding models are likely to need review.

[14] The recently commissioned ABS survey on employer practices will provide valuable information when it becomes available.

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