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A Well-Skilled Future

Sue Richardson*, Richard Teese**

What is a Well-Skilled Future?

Skills are expensive to deliver and expensive to acquire. Not only do they require the time and money of students, they also demand effort, persistence, a willingness to be taught and exposure to unfamiliar tasks and ideas. Because acquiring skills is difficult and expensive, it is important to have an idea of how much is enough. A well-skilled future is one that has the ‘right’ amount of skills. What might this be?

Most of the prosperous nations of today owe their prosperity in large part to the productivity of their workforces. This productivity has two fundamental sources. One is the amount and quality of equipment with which people work. The other is the level and suitability of the skills that workers possess. These skills add directly to productivity. But they also make it profitable for firms to invest in advanced and complex technologies and equipment. Such capital does not add to productivity on its own. It must be used by workers who are capable of operating it to good effect and of maintaining and developing it. Frequently, this requires high levels of skill among the workforce. One aspect, then, of a well-skilled future is that firms are confident of investing in advanced equipment, technology and management systems, knowing that they will be able to find the quality workforce that will get the most out of their investments.

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The second important aspect of a well-skilled future focuses on the potential productive capacities of the people of working age. Every person has the potential to offer more to the economy than just their raw labour power. They do this by learning work skills—through the formal education system, and informally on the job. Because people vary a great deal in their interests and in their potential capabilities, the skills development system must be diverse and comprehensive in order for the latent productive talents of the workforce to be realised. In a well-skilled future, each person would have real choices about how much effort to put into their own skills enhancement and in the types of skills they acquired. A range of skill development opportunities would be open to people in country areas as well as in the cities; to older people as well as the young; to those with bad schooling experiences as well as those who flourished at school; to migrants as well as the native born; to sole mothers and married mothers; to those with impairments as well as the fully fit. People would have multiple opportunities to enhance and alter their skill sets. They would have effective opportunities to recover from past educational decisions and actions that they come to regret.

An important way in which skills increase national prosperity is by increasing people's participation in paid work. More skilled people receive higher wages and have more job choices. These higher wages and greater choices increase the incentive to take paid work, hence increasing the participation rate. In this way, skills enhancement for the low skilled improves both national productivity and individual financial independence and sufficiency. In a well-skilled future, everyone who seriously wants to develop extra skills in order to be able to find a job is able to do so.

Vocational skills are vital for prosperity. Significantly, they are also vital for equity. Prosperity that is derived from the development of skills—especially vocational skills—is widely shared among the population. The benefits go to all those who increase their skills, regardless of whether they start from a low or a high skill base. Overall, wages are distributed across the population more evenly than are the returns to capital (profits). And the wage gains from having vocational skills are focussed more on the lower wage groups than are the gains from university education. Vocational skills promote productivity in an egalitarian way. The VET system provides opportunities for many who do not prosper elsewhere in the educational system, or who are not gaining significant skills from their jobs. In 2005, 30 per cent of school leavers and 23 per cent of those aged 20-24 were not engaged fulltime in some combination of study and/or work. This lack of engagement will slow down the development of work skills in these key learning ages. A well-skilled future that shares the gains in prosperity widely among the workforce and population thus must give vocational education a solid and central place. Today, about one third of the workforce have vocational qualifications as their highest qualification. 18 per cent have university qualifications and half have no post-school qualifications.

The skills of the population contribute to productivity and equity only if they approximately match, in quantity, type and level, what employers need. Shortages of skills make it harder for firms to produce the quality and quantity of product for which they have buyers. Like shortages of any other essential input, this reduces total production. Surpluses of skills present a different problem. They are not noticed by employers, except possibly in the form of a large pool of high quality applicants for jobs and low quit rates. But they are economically inefficient and personally harmful. Where individuals and the taxpayer (and possibly employers) have expended time and money in the development of a skill, such as that of auto mechanic, the investment is wasted if people so trained cannot get jobs that use that skill. While there will never be an exact match between the skills that people have and the skills that employers want, a well-skilled future would avoid the emergence of either a large unmet demand for skills or a large excess supply.

How do we reach such a well-skilled future?

For the planners who are responsible for assisting in the development of such a future, it would be ideal to be able:

- to project accurately the size and shape of the future demand for skills over a planning horizon of 5-10 years;
- to project accurately the size and shape of the future supply of skills;
- to design a vocational education system that will ensure that demand and supply continually match.

We argue in subsequent sections that it is not possible to remove uncertainty about the future in this way, and neither is it necessary. But it is possible to understand more fully the changing environment for vocational skills and the effectiveness of the VET system in responding to those changes.

**Matching Supply with Demand**

The precise meanings of both the demand for and the supply of a skill are
surprisingly difficult to pin down. There are three main reasons for this.

The first is that, with a few exceptions, we have no direct measure of how many people possess a given skill. We often do not have even a clear definition of what constitutes a particular skill. Qualifications are not the same thing as skills, although the two are related. Formal education that leads to a qualification is one way of obtaining a skill. But as we noted above, half of the Australian workforce does not possess a post-school qualification. This does not mean that half of the workforce has no skills. Rather, it illustrates the important fact that many valuable work skills are learned informally in the workplace, rather than formally in educational institutions. This has always been the case. Indeed, the expectation that a majority of people will obtain post-school qualifications is a very recent phenomenon.

The link between skills and qualifications is also attenuated by the fact that many people who have qualifications do not use them in their current jobs. Table 1 illustrates the loose match between qualifications and jobs.

**Table 1: Distribution of Qualifications Within Occupations, Australia 2003**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>University</th>
<th>VET</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managerial and admin</td>
<td>36</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Professional</td>
<td>71</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>Associate professional</td>
<td>24</td>
<td>38</td>
<td>35</td>
</tr>
<tr>
<td>Trades and related</td>
<td>3</td>
<td>73</td>
<td>22</td>
</tr>
<tr>
<td>Advanced clerical &amp; service</td>
<td>13</td>
<td>36</td>
<td>48</td>
</tr>
<tr>
<td>Intermediate clerical etc</td>
<td>12</td>
<td>36</td>
<td>49</td>
</tr>
<tr>
<td>Intermediate production etc</td>
<td>5</td>
<td>28</td>
<td>64</td>
</tr>
<tr>
<td>Elementary clerical etc</td>
<td>9</td>
<td>28</td>
<td>60</td>
</tr>
<tr>
<td>Labourers and related</td>
<td>4</td>
<td>25</td>
<td>68</td>
</tr>
</tbody>
</table>


Table 1 shows that many people work in skilled occupations without a relevant qualification, or any qualification at all. For example, one third of people working in highly skilled managerial, administrative and semi-professional occupations have no post-school qualification, and approximately a third have vocational qualifications. Even in the case of the professions and trades, almost one third of workers do not have a relevant qualification.

The other important insight from Table 1 is that many people with qualifications are employed in jobs that do not require their qualifications. For example, about 13 per cent of Advanced and Intermediate, and 9 per cent of Elementary clerical and service workers hold university degrees: they are clearly overqualified for these jobs.

It is also clear from the table that even many skilled jobs do not actually require the person doing the job to have a relevant qualification. People employed as bookkeepers, human resource managers, warehouse supervisors, landscape gardeners, IT operators, call centre operators, managers of all sorts, are not required to have a qualification and in many cases do not. There are only a handful of occupations, such as electrician and pilot, where it is a legal requirement that a person be qualified. In some occupations, such as university or TAFE lecturer, economist, accountant, auto-electrician, chef, hairdresser and financial officer, it is the industry norm that workers have suitable qualifications. But if the employer chooses to ignore the norm, there is no legal impediment. In some cases, qualified staff are seen as a measure of the quality of the service. Government funding is also sometimes conditional on firms having specified minimum ratios of qualified staff (eg childcare and aged care). But enterprises that do not seek government funds are free to ignore these ratios.

Is the demand for childcare workers being met, if there are no persistent vacancies but many people are employed who do not have relevant qualifications?

The second reason that demand for a skill is hard to pin down is that workers are very varied in their degree of skillfulness. Even if a person has the relevant qualification, some will be superbly proficient and some will be very ordinary. We cannot observe the demand for quality.

Finally, the skills that employers demand often go beyond technical competence to embrace qualities such as commitment, willingness to be flexible in tasks performed or hours worked, capacity for initiative, good presentation and interpersonal skills. Often the need for these personal qualities reflects the way the business is managed, rather than the universal requirements of the job tasks. As with quality, it is hard to observe the demand for these personal qualities, and it is an open question as to whether it is an appropriate task for the vocational education system to try to teach them.

In practice, demand for skills is (imperfectly) measured as the number of people who are employed in occupations judged to require those skills. In a situation of perceived shortage of skills, the number of persistent vacancies should be added to the number actually employed in order to quantify the demand.
The problems of identifying and measuring supply parallel those for identifying and measuring demand. The supply of skilled people is not the same as the supply of people with relevant qualifications. People without qualifications can do skilled work because they have learned their skills on the job. Employers will often overlook the absence of a qualification if a person has relevant experience. But there is no simple measure of experience that can be used to assist in measuring the total supply of a skill. As with demand, the supply of a skill has a quality as well as a quantity dimension. If a person has a relevant qualification, or relevant experience, but is otherwise not very good at the job, are they part of the supply? If they have good technical skills, but not the personal qualities that employers want, are they part of the supply?

With only a few exceptions, it is not appropriate to measure the supply of a skill by counting the number of people in the workforce who have a relevant qualification. A closer approximation is to count the number of people who are working in jobs that require that skill. But supply then becomes almost indistinguishable from demand. We must look to other indicators — most usefully, the duration of vacancies — to conclude whether there is a shortage or surplus of a particular skill. But while the duration of vacancies and like measures can tell us about the current relation between the demand for and supply of a skill, they are no help in looking forward to see whether their will be shortages or surpluses in future.

The essential point to conclude from this discussion is that measures of the supply of and demand for skills are imprecise, and in many (but not all) cases qualifications are not a close proxy for either. It follows that the formal VET system is only part (albeit an important part) of the mechanisms for balancing supply and demand. Skills learned on the job are another part. So too are the various ways that firms adapt to abundance or shortage of a particular skill. A major form of adaptation is by varying the quality of the person they are prepared to employ. When there is an abundance of workers, a firm will be able to choose from a queue of applicantable applicants and select the highest quality person that it can identify. Many others of the applicants may have been able to do the job, but perhaps less well. When there is a shortage of workers with relevant skills, the firm will accept workers who have fewer of the set of qualities that it is seeking, or have them to a lesser degree. Firms will also adjust the relative pay and conditions of the job, in response to an abundance or shortage of the skills they want. But this is only part of the adjustment mechanism.

Even if it were possible to pin down precisely the quantity of a skill that is being or will be supplied and demanded, it is not necessary to do so. The labour market, and the economy in which it is embedded, is dynamic. People are constantly changing their jobs, learning new skills from their work, moving to new locations, moving in and out of the labour force and changing the number of hours per week that they work. At the same time, the demand for skills is dynamic, as firms are born, grow, decline and die, alter the size and skill set of their workforce, recruit strategic new skills, and train their existing employees with new skills as required. As workers and firms search for a good match, shortages and surpluses often sort themselves out. The VET sector does not need to identify every new skilled vacancy that will occur and then train someone to fill it.

While the labour market works, it does not work perfectly. The challenge for VET policy is to identify how best it can assist the adaptive processes of the market, so that adjustments to emerging skills surpluses and shortages are as smooth and fast as possible.

The Future Demand for Skills

Aggregate models

Many countries, including Australia, draw on sophisticated empirical models of their economies to project future trends. The key features of these models are that they:

- describe the entire economy;
- use a combination of economic theory and known (or estimated) empirical relationships to project the future size and shape of the economy;
- are internally consistent, in that the changes that are projected must add up; and
- adopt a general equilibrium framework that traces through the impact of a change in one aspect of the economy on all the other parts.

Several such models have been constructed for Australia, by the Commonwealth Treasury, several university groups and some consultants. The one that is most widely used for forecasting occupational demand is the MONASH model, produced by the Centre for Policy Studies at Monash University.

By both Australian and international standards, the MONASH model is sophisticated and high quality. But all such models attempt a prodigious task. The economy is diverse and complex, many relationships are not linear, and there are unpredictable
shocks from the international economy, from technological change, from individual behaviours, and from government policy. These factors make it almost impossible to project the future with accuracy and detail. Yet such projections are precisely what users of these models want. In the light of this, one would expect to see many careful evaluations of the accuracy of the forecasts of these models. But such evaluations are themselves difficult to do well and there are few of them. To illustrate the difficulties, we quote Haskel and Holt (1999, p. 19), referring to the evaluation of UK models:

Changing systems of classification for industries and occupations, major revisions of historical databases, belated publication of crucial data sets, as well as major and significant improvements to the modeling framework, all contribute to a very confusing picture if one tries to compare past predictions with outcomes. A very considerable effort would be required to ensure that like is compared to like and to disentangle the various possible causes of error (data revisions, model failure, erroneous judgment, etc.). Because of this there have been few systematic attempts to undertake such an analysis.

Despite the difficulties, we argue that more efforts should be made to judge the accuracy of model forecasts, and to identify what aspects are most and least accurate. An evaluation of the MONASH model undertaken by Access Economics (2005) came to the following main conclusions about the robustness of its labour market forecasts:

- The projections of the levels of employment were reasonably reliable at an aggregate (Australia-wide) level.
- Reliability fell as projections were provided at a more detailed level, disaggregating by region, by occupation and by qualification level.
- Reliability was too low for projections to be valuable for planning VET capacity at specific skill or regional levels.
- Reliability fell as the length of the forecast period rose.

This suggests that model projections should be used judiciously to inform the planning process. In our judgement, they are best used to assist the VET sector to align the broad structure of its offerings to the anticipated future needs of the economy, including replacement demand. It is unreasonable to expect the models to provide accurate projections of the detailed occupational demand at a regional level five to ten years into the future. Model-based projections of demand growth are likely to be valuable to distinguish skills that are likely to be in growing demand from those likely to be in static or falling demand. They will be much less satisfactory if they are expected to provide detailed information, by skills and regions, about year-by-year fluctuations in demand.

Capturing Recent History

As an alternative to using large, complex, data-intensive models to look forward, we sought to capture the evolving trends through fitting best fit curves to past data. The trends for net occupational growth were then projected forward as far as 15 years. We concentrated on those occupations that made intensive use of vocational qualifications (excluding the professions and elementary service and production jobs). The caveats that apply to model-based projections apply with equal force to trend-based projections. We therefore did not attempt to disaggregate beyond the two-digit occupational codes, or by region. Projections of increases in net demand become increasingly unreliable as the time horizon extends, and the 15-year projections are at best suggestive.

In sum, we concluded that, for the VET-intensive occupations:

- Employment will grow a little faster than total employment.
- The economy will need a net addition of about 500,000 VET-qualified workers by 2020.
- At the peak, there will be 1.2 million exits of workers per annum, and only 0.4 million entrants.

The greatest growth in net demand will be for:

- advanced diploma and diploma qualifications (especially in business and management);
- intermediate service workers;
- skilled horticulture/agriculture workers; and
- construction workers.

- There will be net falls in demand for:
- farmers and farm managers;
- automotive and food tradespersons; and
- secretaries and personal assistants.
- There will be slow growth in demand for:
- other categories of tradespeople; and
- advanced clerical and service workers.

These projections give us some feel for how the pattern of occupations is changing, but only an indirect account of the changing demand for skills. We obtain a more direct account of the evolving demand for skills by looking within each (detailed) occupation to see what skills are required to perform the job. We applied a framework derived from the US Department of Labor's Dictionary of Occupational Titles to code each (four digit ASCO) occupation according to its requirements for cognitive skills, interactive skills and motor skills and the levels of complexity with which the skills need to be applied. The skill scales are set out in Table 2 below.

<table>
<thead>
<tr>
<th>Cognitive Skills ('Data')</th>
<th>Interactive Skills ('People')</th>
<th>Motor Skills ('Things')</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Synthesizing</td>
<td>0 Mentoring</td>
<td>0 Setting Up</td>
</tr>
<tr>
<td>1 Coordinating</td>
<td>1 Negotiating</td>
<td>1 Precision Working</td>
</tr>
<tr>
<td>2 Analysing</td>
<td>2 Instructing</td>
<td>2 Operating - Controlling</td>
</tr>
<tr>
<td>3 Compiling</td>
<td>3 Supervising</td>
<td>3 Driving-Operating</td>
</tr>
<tr>
<td>4 Computing</td>
<td>4 Diverting</td>
<td>4 Manipulating</td>
</tr>
<tr>
<td>5 Copying</td>
<td>5 Persuading</td>
<td>5 Tending</td>
</tr>
<tr>
<td>6 Comparing</td>
<td>6 Speaking-Signalling</td>
<td>6 Feeding-Off bearing</td>
</tr>
<tr>
<td></td>
<td>7 Serving</td>
<td>7 Handling</td>
</tr>
<tr>
<td></td>
<td>8 Taking Instructions - Helping</td>
<td></td>
</tr>
</tbody>
</table>

The skill scores of each occupation were combined with our projections of growth in (a) the VET intensive occupations and (b) the fastest growing industries to provide estimates of projected growth in demand for specific types and levels of skill. These projections reveal that cognitive and interactive skills will become increasingly important, at the expense of motor skills. Further, the levels of complexity of the skills will rise. Interviews with key informants reinforced these conclusions. The VET sector will serve its students well if it pays careful attention to identifying the cognitive and interactive skills that will increasingly be valued in most of the vocational occupations. At the same time, it will be called upon to provide increasingly sophisticated training in such high level cognitive and interactive skills as analysing and negotiation in the growing number of jobs that will require these skills.

It is clear that the structure of industry, and with it the structure of occupations, is changing. There is also an often-heard view that the way in which work is organised within an industry is also changing, towards:

- the use of team-based work systems, requiring co-operation and multi-skilling among team members;
- the decentralisation of authority and decision-making;
- the sharing of knowledge between employees to facilitate efficient work and rapid response to changing market demands;
- greater responsibility for work being taken by the workers themselves; and
- the practice of workers moving freely between tasks as required.

Together, these are often described as the characteristics of high performance work places. Their success requires that workers, in addition to possessing task-specific skills, have teamwork skills and the ability to adapt and learn quickly. If it is true that workplaces really are changing in the manner described, then it places important demands on the VET sector to promote the capacities in their students that would enable them to flourish in such an environment.

Our study found little evidence that high performance workplaces are indeed becoming widespread. While there have been many experiments, few have persisted beyond an initial implementation phase. What has been happening, however, is re-organisation designed to reduce costs. This principally involves reducing the size of the workforce (but not the work to be done) and increasing the numbers of workers on contingent terms of employment (e.g. casual and agency). Workers in this new environment probably do need additional skills, and some of these skills match those purportedly required in high performance workplaces. Casual and contract staff benefit from a capacity to co-operate and
to negotiate quickly their places in the organization. The supervisors who remain
after downsizing need a wider range of skills, as they are expected to take on
some of the managerial functions, such as budgeting, managing occupational
health and safety, dealing with complaints and with rostering.

Demand From Students

The student body undertaking vocational education courses is becoming older
and more female. One reason for this is the increasing variety of pathways
through the life course that are now becoming apparent. By life course we mean
the timing and sequencing of major life events, such as completing fulltime
education, leaving home, commencing fulltime work, getting married, having
children, undertaking further study and retirement. A clear majority of Australians
still move through these stages in the conventional order. But a growing minority are
doing it differently. The differences include delayed movement out of the parental
home; combining fulltime education with part-time work; delayed partnering and
parenting; combining motherhood with paid employment (for both married and
single mothers); increasing part-time employment or non-employment of prime
age men; and participation in education and training in adult years (often while
in fulltime employment). These changes have implications for both the number
and characteristics of the post-secondary school student body.

The composition of the post-secondary student body has displayed significant
elements of change. First, the proportion of fulltime students in conventional
life course statuses hardly changed between 1981 and 2001; though a smaller
proportion were in training immediately after leaving school and more were
upgrading existing qualifications. Secondly, the age distribution of CAE/University
students hardly changed, while that of TAFE/College students aged somewhat.
But the proportion of part-time students in non-conventional life course statuses
increased sharply to just over half by 2001. Moreover, virtually all of this increase in
diversity amongst part-time students was in the VET sector. The rising proportion
of VET students in non-conventional life course pathways arose from a variety of
sources, including increasing proportions taking their first post-school qualification
after the age of 29, more single parents, and more prime aged men without fulltime
jobs. Much more than universities, the TAFE/College sector is the rising route of
choice for these relatively disadvantaged groups, and for those in a whole range
of other non-conventional life course statuses.

The consequences for the age and sex distribution of VET students are seen
in Table 3.

<table>
<thead>
<tr>
<th>Age</th>
<th>Females Share in 1996</th>
<th>Females Share of increase</th>
<th>Males Share in 1996</th>
<th>Males Share of increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>28</td>
<td>28</td>
<td>38</td>
<td>35</td>
</tr>
<tr>
<td>20-24</td>
<td>21</td>
<td>12</td>
<td>25</td>
<td>19</td>
</tr>
<tr>
<td>25-29</td>
<td>11</td>
<td>4</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>30-39</td>
<td>20</td>
<td>11</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>40-49</td>
<td>13</td>
<td>23</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>50+</td>
<td>5</td>
<td>19</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Total of all VET students</td>
<td>47</td>
<td>57</td>
<td>53</td>
<td>43</td>
</tr>
</tbody>
</table>

Source: NCVER National VET provider collection. Figures may not add to 100 because of rounding.

Table 3 shows that students going straight from school (aged 15-19) remain a
large and constant part of the VET student body. But the proportion aged 20-39
has fallen for both men and women, while the proportion aged over 40 has risen
substantially. Over 40 per cent of the increase in the number of female VET
students were aged over 40, while the comparable figure for men was 33 per
cent. A clear majority of the additional students (57 per cent) were female.

Given the continuation of existing patterns of skill utilisation through the life
course, the VET sector has two important opportunities. First, it can continue
to provide training to school leavers entering a conventional life trajectory of
completing training before commencing a career. Secondly, it can cater to the
special circumstances of its increasingly unconventional part-time student body,
thereby enhancing the employment opportunities of these relatively disadvantaged
groups and increasing the supply of relevant skills to the Australian labour market
from non-conventional employees.

Further analysis examined how people offer their skills on the labour market over
their lives, and whether this is changing. We found that patterns of skill utilisation
are quite different across different occupations, and amongst women compared
to men. Two key points in relation to skills imparted by the VET sector are the
following. First, tradesmen (the gendered term is intended) generally obtain their
training and enter their occupations by their mid-20s. But rather than remaining
in their occupations as, for example, professionals tend to do, they begin leaving them almost immediately, and continue to do so at a fairly steady rate throughout the working age ranges. Secondly, male clerical, sales and service workers appear likely to be gradually promoted to more responsible positions over their careers, thus reducing their involvement at more routine levels of these occupations at older ages. Many women in these occupations, however, leave their jobs (or, probably, reduce their hours) at prime childbearing ages and then re-enter them at older ages. These older women are an important source of entrants to the more elementary and intermediate of these occupations. While the data are far from perfect, there is no evidence that any of these patterns of skill utilisation is changing substantially, beyond the generally increasing labour force participation of women that makes them more likely to use their skills at older ages.

**In Sum**

The future demand for vocational skills is difficult to project. But current trends suggest that while there has been a large shift towards higher education, the demand for vocational skills is likely to remain strong, though to change character. It is evolving in two ways. One is towards higher level qualifications — advanced diplomas and diplomas. The other is towards more widespread and higher level interactive and cognitive, as distinct from motor, skills. The recent strong employer demand for training in some of the skilled trades goes against a longer term trend for slow growth in trades employment. The growth areas, rather, are for skills to serve higher-end service industry needs, especially business and administration skills. It is the change in the structure of industry, much more than any change in the ways in which existing tasks are done, that is driving the move towards higher level vocational skills.

**The Future Supply of Skills**

There are two main forces affecting the supply of vocational skills. One is the extent to which people acquire new vocational skills, either through undertaking formal courses or by learning these skills on the job. The other is outflow of skills that occurs as a result of retirement. Over the next 15 years, the ageing of the workforce will increase the rate of outflow of skilled workers, but more so in some occupations than in others.

The size of the adult population (aged 15 years and over) will grow by 3.3 million from 2005 (some 16.2 million) to 2020 (about 19.5 million). But the age structure of both the adult population and of the component that is of traditional working age (15-64) will change. The population of working age will continue to grow (by 1.7 million people), albeit at a declining rate. The most rapid growth will be among the older ages. The proportion of the working age population that is aged 50-64 will rise from 25 per cent to 30 percent in the 15 years to 2020, while the proportion aged 30-49 will fall from 44 per cent to 41 per cent. The rising proportion of workers in older age groups means that the absolute number of people exiting from the labour force each year will almost double, taking with them their valuable vocational skills.

Despite this increase in retirements, the stock of vocational skills will rise as more qualified age cohorts move through the workforce. Reinforcing this is the shift to higher level qualifications among the VET-qualified workforce. This is particularly apparent in the Advanced diploma and Diploma qualifications that are being obtained by people working in managerial and more senior administrative positions, and in many of the semi-professional occupations.

By 2020, the total number of people with VET qualifications projected to be employed in the five VET-intensive occupations will, at around 2.81 million, be almost half a million more than in 2004. Most of the increase will be for qualifications in the fields of Associate professional and Managerial and administrative work.

People with VET qualifications enter occupational groups in widely varying ways, and at different ages. People enter the trades (and farming) at a young age, and start to leave the occupation by their mid-20s. In contrast, people enter the ‘Management’, ‘Associate professionals’ and ‘Intermediate’ clerical jobs at every age up to the mid-40s.

For males, almost all new entrants to the workforce are and will continue to be young: 85 per cent are teenagers and 15 per cent are aged 20-24. VET has a crucial role in providing learning options for these young men. The age profile for women is more complex, with teenagers comprising about 60 per cent currently, but falling to 52 per cent in future.

The VET-intensive occupations that will have the most rapidly ageing profiles are mostly the Associate professional and Advanced clerical jobs. Of these, the most rapidly ageing, measured by change in the proportion aged 55 years or over, are ‘Health and welfare’, ‘Science/ engineering’ and ‘Other associate professionals’, and ‘Secretaries and personal assistants’. These are the types of jobs where experience is particularly valuable, and physical capacity much less so. There is every chance, then, that the productivity of these workforces will actually increase as a result of the ageing that will occur over the next 15 years, as they...
become more experienced, even without any additional formal VET training. If we think of the supply of skills as the number of people employed multiplied by their productivity, as we should, then the effect of ageing for the most rapidly ageing occupations will most likely be to increase the supply.

This is much less likely to be true for the Trade occupations. One reason is that they are expected to age less rapidly (a relatively small proportion being in the ‘baby-boom’ age group, because many have left the trades by their middle ages). A second reason is that the trades often make more physical demands on workers than do the white collar Associate professional jobs. As people pass their mid-50s, these physical demands are likely to be less easily managed, thus preventing an increase, or leading to a decrease, in productivity. The productivity of tradespeople rises quite fast soon after they complete their qualifications, but only slowly for the remainder of their time in the occupation. This, in turn, means that changes in the age distribution of tradespeople will have little effect on their average productivity, and hence on this aspect of the supply of trades skills.

Skills Learned on the Job

The reason that many people can work in jobs for which they have no formal qualification is that they learn the necessary skills informally on the job. People learn to be better, more efficient and more productive workers in the process of doing their jobs. They also learn new skills incrementally, thus keeping abreast of developments in technology. Some of this learning is gained from the advice and informal instruction of fellow workers. Some arises from more formal instruction on the employer’s premises, organised and paid for by the employer but not leading to formal educational qualifications. Some is learned from formal instruction that does lead to a qualification, which may or may not be funded by the employer. The informal ways of learning add considerably more to the stock of worker skills than does formal instruction in accredited courses (Richardson 2004). On the job learning is a vital part of the system for the development of vocational skills.

Not all jobs are equally good at providing opportunities for skills development. One aspect that affects such opportunities is the expectation that a person will stay in their job for a reasonable period. It is costly for employers to take on less skilled people and then to assist them to learn the necessary skills. Employers will be reluctant to incur these costs for workers who are likely not to be with them for long, and who will take the extra skills learned with them when they leave. One indicator of how long a job is expected to last is the form of the employment contract. There are many ways in which people are employed. These include permanent fulltime or part-time jobs, casual fulltime or part-time jobs, agency, labour hire, and labour-only sub-contract. The first category is the one that signals the greatest intention of longer duration employment. The other categories are often referred to as contingent forms of employment. We show that the expectation that people who are employed on permanent contracts get substantially more skills development on the job is in fact correct.

- Most types of training that are acquired on the job are systematically and substantially less for casual employees than for permanent employees. The one exception is training that is not supported by the employer. Casual workers are less likely to experience employer-provided training. Such training as they do get is more likely to be basic induction and safety training; and the total hours that they spend in training is about two-thirds that of permanent workers.

- The total hours of employer-sponsored training fell over the four years to 2005, by 15 per cent for permanent and 27 per cent for casual workers. In total, casual workers get about half the employer-provided internal training and a mere fraction of the employer support for external courses that permanent workers get.

- It is very likely that the levels of job-related training received by labour hire and self-employed workers are also less than those experienced by fulltime continuing workers, though evidence on this is scarce.

Overall, it is the expectation that the employee will have continuing employment with the firm, rather than the number of hours worked, that seems to be the powerful force influencing the extent of job-related training. This is what is to be expected. Firms recover the cost of the training which they provide to workers only if the workers continue in their jobs.

Is the low level of training for casual workers just a consequence of the occupations, industries or personal characteristics associated with a casual contract? The limited evidence shows that, even after controlling for a wide range of personal and job characteristics, casual employees are still much less likely to have undertaken employer-supported training.

The importance of this is that here have been major changes in the ways in which people are employed. These changes are strongly away from permanent fulltime employment and towards all the alternatives, especially for men. In 1992, 70 per cent of all jobs were fulltime and permanent, so that it was appropriate to view
such a form of employment as the norm. But since then, only 41 per cent of the 1.9 million extra jobs created have been fulltime permanent jobs. Growth has been particularly strong in casual employment, and a new trend has developed — toward the fulltime casual. All the changes are more pronounced for men than they are for women.

Table 4 shows the key changes, for men and women, in permanent/casual and fulltime/part-time employment.

**Table 4: Forms of Employment as Per Cent of Employment by Fulltime/Part-Time and Sex, 1992-2005**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Form of employment</th>
<th>1992 ('000)</th>
<th>2005 ('000)</th>
<th>Change from 1992-2005 ('000)</th>
<th>% of increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Fulltime Permanent</td>
<td>2769.9</td>
<td>3159.7</td>
<td>389.8</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Casual</td>
<td>201.5</td>
<td>370.2</td>
<td>168.7</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Part-time Permanent</td>
<td>68.7</td>
<td>152.3</td>
<td>83.6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Casual</td>
<td>261.3</td>
<td>445.8</td>
<td>184.5</td>
<td>10</td>
</tr>
<tr>
<td>Female</td>
<td>Fulltime Permanent</td>
<td>1475.6</td>
<td>1879.5</td>
<td>403.9</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Casual</td>
<td>118.2</td>
<td>215.1</td>
<td>96.9</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Part-time Permanent</td>
<td>424.0</td>
<td>811.5</td>
<td>387.5</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Casual</td>
<td>713.2</td>
<td>917.9</td>
<td>204.7</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>6032.6</td>
<td>7952.1</td>
<td>1919.5</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: ABS Labour Market Statistics, Cat. No. 6105.0, Various Issues

Note: Excludes the self-employed.

Table 4 shows that, since 1992:

- only 20 per cent of all new jobs were for men employed fulltime on a permanent basis;
- women have seen strong growth in permanent jobs, both fulltime and part-time; and
- men have seen a large fall in permanent fulltime jobs and a large rise in casual jobs, both fulltime and part-time.

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The employment of men fulltime, but on a casual basis, is rising rapidly. In 1992, 6 per cent of men were employed on these terms, but they comprise 20 per cent of all new jobs created since then. Growth in permanent jobs has been concentrated in occupations that mostly require higher education, rather than vocational education. The vocationally important trades occupations and advanced clerical occupations have seen particularly large shifts away from permanent fulltime employment, up to 2005.

Men have been more adversely affected by the trend to casual and part-time employment than have women. The gender difference is amplified by the fact that for men, casual employment, even if fulltime, offers particularly low levels of job-related training. The category of employment that is growing fastest for men (casual, including fulltime casual) is also the one that is least likely to offer opportunities for skills development on the job.

**Implications for VET**

The shift to casual employment for fulltime (especially male) workers that is highlighted in this study is a new and substantial development. It has very significant implications for the ways in which vocational skills are acquired. In particular, the contribution that is made by employers, through the provision of training on the job, is almost certainly diminished by this development. The implications for training are reinforced by the fact that such growth as there was in continuing jobs for men was not in the key learning ages of 20-30, but in the established ages of 45-60. Employment growth for 20-30 year olds, such as it was, was almost entirely in casual employment, especially for men. This is a very significant development. Earnings profiles show that the years between 20 and 30 are when formal and informal learning on the job is especially strong.

The shift away from fulltime continuing employment is likely to put the informal and semi-formal processes for vocational skill development seriously at risk. Learning on the job has always been fundamental to the enhancement of the skills (and job opportunities and wages) of the less educated. This group is likely to be particularly hard hit by the shift to casual; labour-hire and labour-only contracting that is such a part of recent Australian labour market history.

If the trends which we have identified persist, then Australia must look to other ways of ensuring the continuing enhancement, refreshment and adaptation of its stock of vocational skills. In particular, it is likely that the task will shift increasingly to the formal VET providers. There will need to be more VET courses, geographically...
accessible to the entire vocational workforce. These courses will need to cater for people, from a wide variety of backgrounds, at many points in their careers. The reduced employer support for training means that, if it is not to fall, skills development will increasingly need to be funded by the workers themselves, and the taxpayer.

Patterns of Participation in VET

The future direction of skill requirements and the likely growing importance of the formal VET sector to the Australian economy raise the question whether the current ‘reach’ of the sector into the Australian community is adequate. Community reach can be defined in terms of which groups participate in formal VET (social breadth) and at what levels of training (educational depth).

Figure 1: Students by AQF Level, Australia 2004.

![Diagram showing distribution of students by AQF level in 2004]

Source: NCVER (National VET Provider Collection 2004)

A well-skilled future depends on a population that is responsive to emerging skill needs and has effective access to appropriate training opportunities. As well as accessible opportunities, people need incentives to invest in training, confidence in the likely value of this as against other uses of their time and energy, and also the individual capacity to undertake training, given levels of schooling and post-school education or experience. Economic projections suggest that higher levels of training will be required in the future, and in general these depend on either successful schooling or substantial relevant experience in the workplace. Thus it is not only the responsiveness of the formal VET sector that is relevant to the goal of a well-skilled future, but the effectiveness of schooling, including for a wide cross-section of the population.

Looking at the award pattern of participation in the public VET system in 2004, we find that about half of all students across Australia are enrolled in basic courses (Certificates I and II) or in non-award courses (see Figure 1).

Schooling Levels and VET Participation

This pattern of participation reflects a number of population characteristics which set limits on the responsiveness of the VET sector to emerging skill needs. As we have already noted, in 2005 some 30 per cent of school leavers and 23 per cent of individuals aged 20-24 were not engaged fulltime in some combination of study and/or work. Approximately one in four young people leaves school without completing a senior school certificate. Over time, this leads to a large pool of individuals with incomplete schooling. Besides the population who are schooled in Australia, many immigrants to Australia who are now active in the workforce did not complete school. The VET sector is the most accessible avenue of training for these groups. The award pattern of participation reflects this. As a result, while industry training needs are shifting upwards in terms of required levels of training, a large proportion of the total training effort is currently absorbed in courses which essentially compensate for incomplete schooling.

A second relevant issue relates to award progression. To what extent do individuals who undertake basic training move on to skilled and higher level VET? It is not clear that the Australian Qualifications Framework (AQF) functions as a system of training progression involving significant levels of vertical mobility. Rather, it appears that individuals access certain levels of the award hierarchy, based on the level of schooling they achieve, their access to jobs which require certificated training and their participation in higher education. In effect, levels of training tend to be segmented rather than linked.

The Social Hierarchy in Award Participation

Associated with this segmented pattern is a social pattern of participation. As participation in higher levels of VET tends to be linked to completed schooling,
and as school completion is in turn linked to socio-economic status, the higher award levels also have higher SES intakes. By contrast, as early school leaving is more common amongst lower SES groups, the VET courses which compensate for this also have lower SES intakes.

An analysis of award levels of participation by band of SES is presented in Figure 2.

**Figure 2: Award Pattern of VET Participation in Each Band of SES**

![Award Pattern of VET Participation in Each Band of SES](image)

*Source: NCVER (AVETMISS data 2004)*

This shows, for example, that as many as 46 per cent of VET students of high SES are enrolled in middle-level programs (Certificate IV and above), and only 24 per cent in basic VET (Certificates I and II). At the lower end of the social scale, only 29 per cent of students in the lowest tenth band of SES are enrolled in middle-level programs, while 36 per cent are taking basic courses.

These different patterns of award participation produce a social hierarchy in the AQF which is graphically illustrated in Figure 3. In general, the higher the level of training, the higher the SES level of the people undertaking training.

**Figure 3: Average SES of Students Enrolled in a VET Course by AQF level, 2004.**

*Source: NCVER (National VET Provider Collection 2004)*

**The Double Challenge of Higher Skills Levels and Greater Equity**

The challenge facing the VET sector is not only to deliver higher levels of skills, but also to broaden the social basis of the population possessing these skills. This challenge can be formulated in the question: Can we achieve greater overall depth of training — a more highly skilled population overall — without achieving greater social breadth at higher AQF levels?

To meet the double challenge of training depth and social breadth assumes that the major barriers which block participation — including for particular groups — can be identified. What are the barriers?
Barriers to Participation

Analysis of geographical variation in VET participation and field studies of provision suggest that there are three main barriers which need to be addressed: structural, demographic or cultural; and institutional.

Structural barriers to participation relate to the nature of industry, employment and the labour market in a region. Regional economic structure influences participation in VET through the presence or absence of employment incentives to training. Where local industry generates work which requires formal training, this creates economic incentives for individuals to invest in training. But where employment is concentrated in sectors with limited call on formal training, the incentives are weaker. In Australia, a high implantation of manufacturing, mining, retail and some other sectors (such as energy) is associated with higher rates of participation in VET, after controlling for demographic influences. Overall levels of employment also affect participation. Where unemployment is high, this appears to generate a disincentive to training and hence lower levels of participation.

Cultural barriers relate to population characteristics, on the one hand, and to attitudes and perceptions, on the other. The population characteristics which influence regional differences in participation are educational attainment, indigeneity and ethnicity (non-English speaking origins). Where the adult population has acquired a relatively high level of post-school qualification as measured by the proportion of diploma or degree-holders, participation in VET tends to be lower. Indigeneity has a variable independent influence on VET participation, depending on the award level. The higher the relative incidence of the indigenous population, the higher the rate of participation in basic VET and the lower the rate of participation at Diploma level. Non-English speaking origin is positively related to VET participation, especially in non-award programs, but also at Diploma level. These demographic characteristics are influential, but not as powerful as economic factors. Regional economic structure accounts for very much more of the variation in VET participation. The demographic impact tends to rise, however, as award levels are ascended. In other words, the nature of the population becomes increasingly important, the higher the level at which VET is undertaken. There are other cultural factors which are known to influence participation in VET. These will simply be noted here rather than documented. Perceptions of the VET sector influence the willingness of individuals — especially school leavers — to undertake VET. Some studies suggest that school leavers often have poor knowledge of VET and view the sector as more suitable for low achievers (see, e.g., Teese, Mason and Nicholas 2005).

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Institutional barriers to participation refer to the way VET providers relate to industry and community. Field studies suggest that VET providers differ in the strength of their links with local business and industry, with local communities, with other VET providers and with schools, and how more generally they perceive their client base (which students, which industries?). The challenge to the VET sector is how to reduce structural, cultural and institutional barriers to participation in order to raise overall levels of training and widen social access to these levels.

The VET System of the Future: Setting Priorities

The VET system of the future will deliver higher levels of training than at present. That is, a greater share of its resources and a greater proportion of its students will be found in skilled, middle-level and advanced training. At the same time, VET will be extending opportunities at these levels to a wider social range of individuals. The system will be better linked to business and industry at a local level, as well as giving greater mobility to people so that they can work outside their regions and circulate more freely within the global economy. Providers will be more flexible in delivery approaches, including in the workplace. There will be a greater mix of providers, including adult and community providers, to suit both employers and employees.

Working towards such a future requires setting priorities. Building a platform of foundation skills (both general and vocational) will remain a priority, especially where individuals have incomplete schooling or an unsatisfactory experience of schooling. Progressively, however, priorities should shift to focus on skilled, middle-level and higher training, all of which represent what is distinctive in the work of VET and contribute ‘added value’. That is, these levels of VET build on and enrich successful schooling or successful integration in the workplace, and extend the capacities of individuals.

Within this ‘value add’ perspective, equity will be a major priority. Broadening the social basis of recruitment to skilled and higher levels of training is vital if the whole of the population is to contribute to the enhanced skills base of the future. Equity will impose the need for client-sensitive delivery approaches as well as effective inclusiveness strategies.

For VET to shift towards more value-added work presupposes corresponding improvements in how school works for all sections of the population. This means more successful schooling for learners from lower socio-economic status...
From Priorities to Strategies

In broad terms, the twin objectives of greater training depth and greater social breadth will call for strategies which:

- achieve a mix of providers and delivery platforms to increase flexibility and responsiveness;
- multiply the employment incentives to training as well as accessible opportunities for training; and
- build employer commitment to training, including in the workplace.

Models of VET in High-Participation Regions

The VET sector already displays these strategies at work in a range of different regional settings.

Field studies indicate that high levels of participation in VET can be achieved through two models of provision: a community partnership model and a market-based model.

The community-partnership model is characterized by:

- partnerships facilitated through local government;
- providers establishing business development units comprising industry liaison officers;
- strong partnerships between VET providers, local businesses, local government and schools;
- regular liaison and monitoring of businesses in regions;
- flexible delivery: workplace, campus-based, online and combinations; and
- for individuals and groups, strong focus on needs assessment and targeted programs.

The key role of inclusiveness strategies is captured in Figure 4. This shows that where TAFE institutes have well-developed strategies, levels of VET participation

Figure 4: Rates of Participation of Selected Groups in 58 Australian TAFEs by Least and Most Well Developed Inclusiveness Strategies, 2004

Source: NCVER (AVETMISS data 2004) and Impact of TAFE inclusiveness strategies.

The market-based model is characterized by:

- many and varied providers, including private and community providers and TAFE;
- industry growth and diversification as key factors in the defining roles of VET providers;
- competition, particularly for fee-for-service and industry training;
- providers having skills assessment units;
- development of customised training programs, modules, competencies and qualifications;
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populated VET landscape, collaborative local networks, positive community attitudes and responsiveness to the motivations of potential students are essential components of what is required.

The VET system will need more resources, as it faces a more demanding future. It will need simultaneously to expand its size, teach at higher levels, teach a more diverse and older student body and extend its geographic reach. The greatest expansion in demand for VET courses will be for higher level qualifications. A skilful management of the culture and resources of VET will be necessary if it is simultaneously to improve its services to the educationally disadvantaged and to place a growing emphasis on its top-end qualifications for associate professional and managerial jobs.

The system will face pressure to offset the reductions in employer-based training, though it is difficult for it to replicate the geographical spread and range of skills that employer-based learning provides. It should seek creative ways to work with and through employers as agents of training. In this way, there is an opportunity for the VET sector to take a lead in training workers who, at unconventional points in their lives, will supply skills that are in short supply.

References


