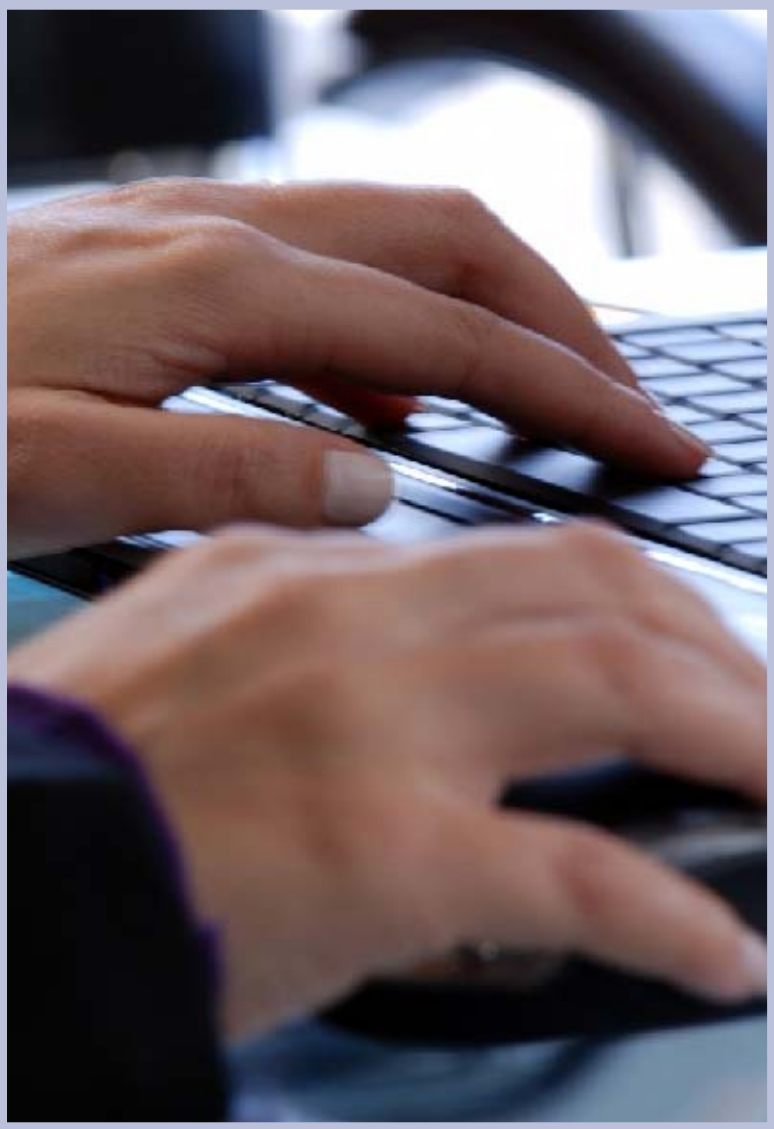
Responding to changing skill demands

Training packages and accredited courses



NATIONAL CENTRE FOR
VOCATIONAL EDUCATION
AND TRAINING

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Responding to changing skill demands: training packages and accredited courses

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National Centre for Vocational Education Research

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Additional information relating to this research is available in *Responding to changing skill demands: training packages and accredited courses—support document*. It can be accessed from NCVER's website <http://www.ncver.edu.au/publications/2292.html>.

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About the research

Responding to changing skill demands: training packages and accredited courses

Josie Misko, NCVER

This report, commissioned by the federal Department of Education, Employment and Workplace Relations (DEEWR), investigates whether vocational education and training (VET) has adapted to meet the changing needs of work. It provides examples of how work has changed for different occupations and functions, and how systemic mechanisms such as training packages and accredited courses are used to help the system respond to these changes.

The findings indicate in particular that:

- Regulation and business needs drive changes in the way the competency-based training system operates.
- The system has strong mechanisms for identifying the needs of specific industries and occupations and formulating units of competency in training packages and accredited courses to address these needs. However, too much bureaucratic red tape and unnecessary detail make the system sluggish in responding to emerging needs in a timely fashion.
- Having strong mechanisms for the development and review of training packages and accredited courses is only part of the picture. These must be complemented by effective teaching and rigorous assessment practices, as well as up-to-date materials and technology for learning.

Adaptation of the training system is one thing, but it will only be effective if employers ensure employees acquire the new skills. This requires an organisational culture which is conducive to training, and worker willingness to engage in training.

Tom Karmel
Managing Director, NCVER

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VET and the changing workplace: an overview

Is vocational education and training (VET) equipped to meet the changing needs of the modern workplace? Over the last two decades advances in technology, information processing and telecommunications have had a significant impact on how we do our work. Computer technology has replaced mechanical equipment and manual operations across industry sectors and functions. The advent of the internet has also expanded and sometimes revolutionised business activities, enabling enterprises, governments and training providers to offer services online and individuals to work remotely. These changes have further intensified the need for workers to become technologically savvy. The internet has also opened up the whole issue of how to make the information (including personal information) that is transmitted over the net more secure. At the same time regulatory mechanisms for protecting the property and financial interests of all citizens and the physical and psychological wellbeing of workers have increased. Such regulations have been a government response to damage caused by major industrial accidents and other events (including road traffic accidents, environmental disasters, terrorist attacks, and crises in financial markets and services). All of these factors have increased the complexity of some work practices and skills, while reducing the complexity of others.

What does this mean for training? Whether these developments have increased or decreased the complexity of occupational skills and knowledge required by enterprises and individuals, there are clear messages for training providers. They need to provide learning activities which will help individuals to develop the required technical competencies as well as their abilities to use relevant technologies. This learning must be supplemented by knowledge about the regulatory environments and industry codes of practice which will affect them in work. Getting this training right will not only depend on the ability of VET practitioners to provide good learning activities, but also on access to the required up-to-date texts, materials and equipment.

The primary interest of this report, commissioned by the federal Department of Education, Employment and Workplace Relations (DEEWR), is whether VET has adapted to meet the changing needs of work. However, our first task is to identify examples of how work has changed for different occupations and functions. We did this by speaking to individuals who have hands-on experience of specific functions in enterprises across a range of industry sectors. We then compare these changes with information about how the VET system has adapted, and we did this by conducting an examination of training packages and accredited courses. We chose this approach because training packages codify what gets taught and assessed in the VET sector. Industry skills councils (ISCs) assisted us with information on how training packages under their care respond to workplace change.

Our content analysis of training packages covered the new units, skill sets, and units of competency that address the specific areas of occupational health and safety (OHS), environmental sustainability, information technology (IT), general book-keeping and financial services. These analyses found that training packages generally reflect trends identified by industry. For example, our analysis of OHS units of competency demonstrates that packages are very specific in identifying and contextualising the skills and knowledge required to ensure the protection of workers across industry sectors. As well as identifying relevant legislation, industry-specific hazards, personal protective equipment, required signage and barriers, the units of competency address issues of leadership, participative consultation and documentation of risk management and, in some

cases, emergency response procedures. So, training packages have an important role in addressing both the specifics of legislation, as well as the more generic competencies required by business.

Over the last two decades, expansion of programmatic logic control applications across industry and the development of computer-aided design, planning and drafting technology, diagnostic and tracking equipment and new materials and substances have also changed the way that work gets done in many industries. We are keen to know whether the VET sector has kept up with these developments. If we look at our analysis of new units we find that around a third of them are taken up by the following three training packages—the Property Services Training Package (CPP07), the Business Services Training Package (BSB 07), and the Automotive and Manufacturing Training Package (AUM08).

Another important issue in this context is whether the content of the units of competency in training packages or accredited courses is overly specific and far more sophisticated than is required. The challenge for industry skills councils and their training package developers is to get the appropriate amount of detail without being too descriptive.

Not all workplace change needs a formal training solution. For example, industry skills councils can only go so far in developing competency units for identifying and meeting the consumer expectations prompted by changes in social trends and cultural practices (for example, preferences for certain fashions, consumer goods, foods, hospitality services and entertainment). Furthermore, it is important for governments and industry skills councils to understand that a training solution is not going to restore lost business. The intervention required in many of these instances is likely to be a business response, such as targeting a different clientele group or diversifying products and services to respond to changing expectations. If there is a need to educate businesses about how to do this, the accredited course solution remains a viable option in the short-term, with coverage being picked up in the training package itself in due course. We are also told by manufacturing companies competing internationally that if Australian businesses want to be successful, they may need to focus on what they do best and look for partners to help commercialise the business. Again, these are not training solutions but business responses.

It is important also to note that getting the coverage and content of training packages and accredited courses right is only the first step, although a significant one. This does not automatically translate into effective implementation, especially in relation to good training and rigorous assessment, which is the other part of the story. There are still concerns among industry parties about whether training packages provide enough information on what constitutes an acceptable simulation, including the provision of access to suitable machinery, equipment and materials.

Industry skills councils are moving into the realm of workforce development, in particular to formal training that leads to productivity improvement. It is still too early to say much about the effectiveness of this approach. In the long run it is up to individual companies and the workers within them to take up the challenge of improving productivity through training. If workforce development is going to include all existing workers, then the whole issue of adequate language, literacy and numeracy training, as well as non-accredited training, will also have to be addressed. Certainly there has been a concerted effort by some industry skills councils to get 'up close and personal' with company training. Training packages can provide helpful information for those companies who decide that they want to adopt formal training solutions to workforce development.

Our research has led us to conclude that VET has robust mechanisms for identifying necessary occupational skills and knowledge and translating these into units of competency. However, challenges remain. These concern the need for registration and course accreditation bodies to investigate how they can continue to remove unnecessary bureaucratic barriers and reduce time delays. For industry skills councils there is a need to revisit the detail and length of the units of competency themselves and to rationalise units of competency addressing similar issues. Not all changes (including the introduction of new materials, tools and technologies) require training solutions, and key stakeholder groups must also learn to differentiate between demands that

require formal training and those that do not. This means that they must be able to identify demands that can be satisfied by informal on-the-job learning and practical experience, and those that are best addressed through the re-organisation of work functions and the diversification of products and services.

The report begins with an account of workplace changes experienced by enterprises; we then report on how industry skills councils say they are responsive to such changes through the development and review of training packages and engagement with stakeholders. We follow this by an analysis of the coverage and content of accredited courses, skill sets and new units of competency, and detailed content analyses of selected units of competency. We then discuss how current arrangements may be strengthened by looking at the results of prior research, and end with some conclusions.

Changes in work practices: what enterprises say

We are interested in finding out the extent to which work practices in companies (including skills required) have changed. We do this to get practical view of how things have changed and to make some judgments about how the VET system keeps up with these changes.

What we have done is to consult with a group of companies across a variety of industries and especially those sectors related to the training packages selected for attention. We have asked representatives (including owners, managers, or department heads) from such companies to identify the four or five major changes that have affected the work practices of people in various sections of their organisations over the last 15–20 years. In a small number of cases we have also spoken to the unions responsible for specific sectors.

In our consultations we have found that in the main what has changed for most sectors over the last 20 years is the environment in which skills are applied and the materials and equipment and machinery used. Across most industries the message is the same; that is, core basic skills of most occupations have not changed in any significant ways. Nevertheless, we cannot ignore the significant changes in skill requirements that have been a result of general advances in information technology, design technologies and telecommunications. These changes have mostly occurred for those who design the short cuts and automations rather than for those who need to apply them. What has happened is that there has been increased complexity for some workers and decreased complexity for others.

Industry skills councils have very elaborate methods for surveying and speaking to their industry sectors on a regular basis. Nevertheless, we will find that issues raised by our small survey accord with those raised in consultations with industry skills councils themselves.

In the following sections we provide an explanation about the major areas for change, as identified by the companies that provided information. More information on these consultations is provided in appendix A of the accompanying support document (available at http://www.ncver.edu.au/publications/2292.html).

General advances in information, communications, and design technologies

Advances in information and communications technology (ICT) have been an important area for all sectors. The great majority of workers in most occupations have had to develop new skills and knowledge to apply the different software packages used for administration, documentation and data analysis. The increased use of online applications and telecommunications means that communication is faster and that retrieval of information is quicker. For example, the increased use of online technologies has meant that claims, inspections, and quoting for jobs for motor vehicle crash repairs can be done online. Photographs of damages can be taken, images uploaded and sent off to inspectors who can then do the quotes and send through their approvals. In the entertainment industry, promotional information for entertainment events can be emailed to newspapers for advertising in very short timeframes. Clients can buy their tickets to events online, download a printout of confirmation of purchase, and present this at the door of the event for

scanning and permission to enter the venue. In the funeral services sector, information collected about deceased persons can now be emailed rather than posted to the agency in charge of births, deaths and marriages. Taxi companies in the past depended on voice dispatch to allocate jobs to drivers; now there is little or no manual handling, and jobs can be electronically logged.

Across industry sectors, clerical operations such as payroll, ordering of equipment and materials, maintenance of personnel records, completion of business activity statements (for tax purposes), and general book-keeping have mostly been computerised. In these cases we can see that, although there has been some change in the nature of skills required (for example, facility with particular software packages), the fundamental complexity of the skill has not increased to a significant extent. In some cases technological advances have made things a lot easier and less tedious for those who have to do the work. For example, where an individual would have had to start a book-keeping process from scratch (say, writing-up double entry records), now the software will automatically create the double-entry record as soon as an invoice is created. Where accurate keyboard skills were required for typists in the days of the typing pool, now the need for this level of accuracy has tended to decline with the introduction of software packages that automatically identify typographical errors or provide online spell-checker facilities.

There is no doubt that workers have generally had to become more technologically savvy, even in industries (like retail and hospitality) where the main skill of providing a helpful and empathetic service is still required, as it was in the past. Today, sales assistants must be able to use modernised cash registers, EFTPOS machines and scanners. Computerised ordering systems are also increasingly being used in restaurants.

The advent of the personal computer has also changed expectations and the roles of IT technicians and professionals. Online access has increased for all workers and departments responsible for key organisational functions in large knowledge-based companies (especially in educational institutions, financial services companies, including banks, and companies dealing with mortgages, insurance and superannuation). In line with this increased access there has been a greater demand for different services and a multiplication of software packages and applications to facilitate functions and processes. An increased volume of electronic information has also been accompanied by attempts to implement better control systems, speedier responses, and decreased downtime.

This more complex IT environment means that work practices for IT technicians and professionals have changed somewhat. Although programmers still have to be able to analyse problems and come up with a suitable code, they have many tools to help them. Advances in internet technology have also changed the IT environment and the applications that must be created and applied to safeguard privacy and security. Mainframes used extensively for big databases have been superseded by different operating systems and database tools. The ability to store information electronically has also led companies holding large databases to implement efficient electronics record management processes for the protection of data and the easy retrieval of records.

Advances in information and communications technology have also opened up the way that work is done for many occupations providing services to companies. For example, it has allowed accountants in private practice to diversify their client base and workers whose work is mainly of a desktop nature to work remotely.

We are told that skills for workers in information technology areas, especially those responsible for writing computer programs, have also been affected by the pressure of increasing consumer demand. Although programmers still need to be able write the programs to ensure that things work, what has changed is the context and environment in which such skills are performed, an environment where there is a constant demand for everything to be automatically available at any place or at any time. Where IT technicians and professionals tended to stay in their offices in the past, they are increasingly expected to interact with others, including internal and external customers and suppliers. This has meant that they have needed better interpersonal and communication skills to explain processes, listen to problems and provide solutions.

Nevertheless, even in the IT field, which was once the domain of only the highly capable and intelligent (often assumed to be those with high mathematics or statistical ability), the advent of easy to use 'scripters' has made it possible for those with very little or no programming knowledge to be able to write programs for games or other applications.

The modernisation of equipment used in warehousing means that there is less manual handling. Nevertheless, very little has changed about the work that needs to be done. Where workers in courier companies once worked with clipboards and pen and paper, now everything is done online.

Automation and 'autonomation'

The increased automation of formerly mechanical and manual operations has also changed the workplace practices in many sectors, especially telecommunications, retail and manufacturing. Optical processing has replaced manual sorting; stock technology provides stores with automatic updates of what is selling, when it is selling and where it is selling. Robotics and other control systems have been introduced to automate production in manufacturing.

The process of what is referred to as 'autonomation' (as distinct from automation) in manufacturing industries has changed the work practices of operators and their supervisors in these sectors. Autonomation describes how ordinary workers can interact with machinery or equipment to respond immediately to problems as they occur. For example, in the past, production line failures would require electricians and mechanics to be called in to diagnose the electrical or mechanical faults which needed to be fixed to restart the line. With the introduction of programmatic logic control mechanisms, operators have less need to call on these trades for help. In addition, better diagnostic equipment available to operators working on the line will mean that most problems can be identified and fixed as soon as they occur. Of course, if problems continue (for example, if the shaft on the machine breaks), such events will require the attention of the traditional trade mechanic. Programmers are only called in when the programmatic logic control systems fail. In the main, however, advances in automation and autonomation enable operators to locate the fault, correct it and restart the line. This has meant that quality assurance and quality control processes are embedded into the production process; that is, they are applied as the line is progressing rather than tacked on at the end.

Light curtains and safety mats using sensing technologies provide immediate warning signals, which will stop the machine when operators step into a hazardous area, or when parts of their bodies stray into the path of a piece of the machinery, which will end in major injury. These have replaced the physical barriers that were set up to help prevent injury.

Major advances in design technology (for example, CAD) have also become more widely available to trades, who originally would have had to draw up their technical drawings for products. The introduction of software packages like CAD has meant an increased level of technological skill for these trades and other designers, and reduced level of skill for those on the production floor, who now often have the role of assembling the pieces. CAD systems are widely used in joinery and cabinet-making.

More regulatory frameworks

Apart from the automation of many processes across industry, the other most significant changes for the great majority of enterprises relate to compliance with regulatory frameworks, including those that apply to workplace and occupational health and safety, specific industry regulations, taxation and goods and services tax legislation. Increasingly, there is a need to comply with regulations aimed at protecting privacy and security across the internet, and protecting the environment.

Occupational health and safety

The need to keep everyone both physically and ergonomically safe at work has been a key driver of occupational health and safety legislation. It is also a key driver of changed workplace practice for workers on construction sites and in car manufacturing plants, just as it is for those in other sectors. For all sectors dealing with the need to remove and dispose of dangerous and hazardous chemicals or materials (like asbestos), it means implementing procedures that protect the safety of workers.

Legislation has underscored the need for workers to wear protective clothing. The legislation also requires companies with over a predetermined number of workers to have a dedicated safety officer whose role is to ensure that safety standards are applied. In the construction industry, and especially on large construction sites, there are requirements for safety boots, safety helmets, ear plugs, safety glasses, hats, sunscreen and personal protective equipment; for example, breathing apparatus for asbestos removal or for cutting up other boards which emit fine dust particles (such as MDF), safety harnesses (for roof work) and safety gloves for working with sharp panels (car manufacturing). Those who need to dig trenches, including plumbers and grave diggers, must also be aware of benching and shoring techniques to prevent soil collapses.

Increased responsibility for bosses and workers under the duty of care legislation is another change experienced over the last 20 years. Companies must also be aware that they can be held responsible for work practices that lead to injury or death; for example, if a driver of a freight vehicle has an accident with a load malfunction, the company can also be liable if it can be shown that the load was not secured in an appropriate manner. Workers themselves can also be held personally responsible for not complying with certain protocols. If a sharp knife is left in a sink, which causes co-workers to be injured, then the person who left the knife in the sink could be personally liable for the mishap. To increase protection for taxi drivers, companies have also implemented surveillance technology in taxi cabs. The use of dangerous equipment like diamond saws in bricklaying must also be monitored. Drug and alcohol testing has also been widely introduced.

Legislation aimed at decreasing injury to society at large has had a specific influence on the hotel trade. Random breath testing and no smoking legislation have changed people's behaviour in pubs; they have also ensured that those selling and serving wine to patrons must comply with legislation dealing with the responsible service of alcohol, and provide areas for smokers. Venues are also required to identify persons who will be responsible for calling police if there is a security issue. The need to comply with legislation at an establishment (for example, a hotel) requires the establishment to appoint a 'responsible person'. In the event of a security check, this individual will know where the license is displayed and where the security register is kept. If there is a commotion it will be the 'responsible person' who will decide when police are to be called. It will also be the responsible safety officer who will need to deal with safety issues. These 'responsible persons' need to undergo a police check. Security clearances are also required for a variety of workers, especially in air freight companies and the airport sector.

The need to dispose of hazardous materials in environmentally friendly ways is another example of how compliance issues affect work practices in enterprises. Dangerous goods need to be stored and recycled appropriately and there is a requirement in manufacturing houses and mechanical workshops for filtration and dust-extraction systems.

In Queensland we are told that the code that governs standards for construction and for building houses, including addressing cyclone and earthquake risk (AS3700), is felt to have become more stringent. This has meant that the mortar that is used for bricklaying needs to be stronger. The move towards diversifying materials (namely blocks, tilt-up slabs, and hebal panels) in place of bricks has also posed additional OHS problems that need to be addressed. The cost of compliance with these regulations has also increased in terms of work cover, self-insurance and the implementation of Australian standards.

Consumer protection legislation

Regulations and codes of practice that apply to certain industry sectors, as well as to certain occupations, have also multiplied. Consumer protection legislation has meant that information and advice given by financial planners, travel agents and banking personnel needs to be transparent. Financial planners need to provide information about the best deals for clients, explain these to them and have clients sign these. This has made the process a little more drawn out than previously. Property managers must be aware of the *Residential Tenancy Act* and compliance legislation, including that related to smoke alarms, face fences, and public liability for landlords. They must also be able to analyse application forms to ensure that renters or buyers will be able to meet payments.

Those in financial services must also be aware of the requirements and be compliant with the Financial Services Regulations, the *Trade Practices Act* and legislation on protection of privacy, prevention of money laundering, and discrimination, while those in freighting industries need to ensure they comply with legislation from a variety of regulators. Retail managers must also be mindful of the requirements of the Australian Competition and Consumer Commission (ACCC) and fair trading regulations and the legality of their processes for the 'lay-by' of purchases and the provision of refunds on purchases so that they comply with appropriate regulations.

Tax legislation

The Goods and Services tax (GST) and income tax legislation have also increased the record-keeping task for administrative personnel and book-keepers and sole operators, who must deal with wages, banking, monthly accounts, and work cover transactions. For accountants, there is increased involvement in the governance of organisations and more stringent adherence to corporations' legislation, which regulates the transparency of information and the need for more stringent reporting.

Protection of privacy and security of information

There are also regulations that affect the work of IT technicians and professionals. These concern the need to embed security measures into the applications themselves to protect privacy and security of information. They have also had to implement policies which govern what people can put into emails or on websites. Legislation about the length of time to keep electronic records has also to be observed.

Better tools, equipment and materials

Another major change in work environments has been provided by advances in the tools and equipment and the materials that are used. Advances in security technology can also enable security cameras to be used remotely so that managers of entertainment establishments can keep an eye on events as they occur. Remote access to electronic files and applications are also used in other industries. Easily transportable laptops, blackberries, and i-phones can be used to keep workers in touch with 'the office' when on the road. This is especially reported for those working in the financial services industries (including financial planners, and business developers).

There has been a multiplication of machinery and equipment required for specific jobs (including programmable and diagnostic machinery, software applications, scanning technologies used in retail stores, welding machinery, and specialised tools and machinery used in automotive repair workshops, cabinet-making and kitchen manufacture, and plumbing). This has helped to automate production and reduce the amount of time taken to complete particular jobs. The main aim is to improve efficiency, as well as cut down labour costs. In the retail industry, the use of scanning technologies has helped to automate ticketing and selling processes. In plumbing, the machinery

and equipment is smaller and more versatile and means that workers can drive into areas which previously could only be accessed on foot. This means that it is easier to undertake drainage jobs.

The nature of materials used within industry sectors has also changed how work is done. Better and faster-drying paints and better fillers used in painting and decorating or in crash repairs are examples of advances in the technology of materials used. Another example is the better lubricants used in car motors. In some cases, advances in materials have also meant an increased cost of repairs, especially in the repair of motor vehicles (for example, the use of plastic clips and screws on motor car parts means that in many cases removal leads to breakage and a new part has to be purchased, so increasing the cost of repairs). The availability of cheaper and stronger plaster for rendering houses has also affected the work practices of bricklayers, especially those using bricks. Previously the plaster generally used was about 12 mm thick; today the new plaster is only about 3 mm thick. This means that the brickwork that lies under the new plaster cannot be untidy because the thinner plaster will not be able to disguise any flaws. Although the basic skills of carpenters have not changed, they too have had to adapt to working with a variety of different materials, including steel track and stud, aluminium, and gyprock.

Advances in telecommunications infrastructure and control technologies

The advent of the internet and online coverage of most activities (libraries, business, automatic teller machines, banks, government business, to name but a few) have revolutionised the way that technicians and network operators work in the telecommunications sector. The data boom has meant that cable transmitters have replaced the transistor and valve systems used in the past. Today mobile phone technologies have also improved to include a large range of applications, including cameras, internet access, tuners and radios. At the beginning of the telecommunications revolution, companies like TELSTRA would employ a large workforce to produce data lines and to install data modems; now, however, such a workforce is minimal and modems have been replaced by circuit boards.

Such changes have meant increased expertise and complexity for a handful of technicians operating the national network system (run from Melbourne). However, the work of technicians in different parts of the system has become easier and less tedious. For example, 20 years ago when there was no internet and telephone exchanges were large rooms housing electro-mechanical switches, there was a need for an extensive and regular maintenance workforce. When copper was used, the work of copper jointers entailed joining, soldering and sleeving wires, making plum joints, and encasing the wires in waterproof material and then placing them back into the pit. Today, fibre optics has replaced the copper wires and there is no need for soldering because a splicing machine will do the whole job. All that is required by the technicians is inserting the cable into the machine and pressing a button—and the cable is terminated and waterproofed. This has made some of the former skills used redundant, and the task of terminating cables less laborious.

The opening-up of the telecommunications market has also meant increased competition and led in part to different forms of work organisation, especially for those engaged in selling and administration. There is increasing use of call centres to promote and sell services and all this work is done from personal computers.

Changes in workplace organisation, practice and culture

In many sectors, changed work practices have resulted from drives for increased productivity and accountability for government funding and shareholder or stakeholder interests. This has led to an increased focus on quality assurance and control, as well as efficient work organisation. In companies with international reach, changes have also been driven by global trends and benchmarks.

In many large manufacturing firms (especially automotive manufacturing) we find that team concepts have tended to replace traditional top-down supervisory approaches. Production operators are organised into cells or teams led by team leaders. Individual business objectives related to people, safety and cost, once held at the area manager level, are now held at the shop floor level. Safety (especially ergonomic safety) has been a critical factor for ensuring the safety and wellbeing of workers. In addition, the dirty, difficult and dangerous jobs have been eliminated in part by the actual design of the vehicle and the process.

Efficiency in the organisation of equipment, materials and processes is also key to a smooth-functioning production process. In engineering and manufacturing companies, systems like 5s help to organise and locate the best place for parts, robots and other machinery. If 5s is about streamlining processes and reducing wastage of materials and of time, then there is also a need to standardise the way to approach specific tasks so that operators can follow the most efficient and effective sequences of work steps and techniques for assembling. A critical motivator of workplace energy in international companies is the data which benchmark the productivity gains or losses in each plant.

Internal and external auditing of processes has been implemented across organisations. This includes quality checks of client information in banking, real estate and property management. Accompanying this is the need for companies to be transparent and more comprehensive in the type of information they maintain in relation to financial transactions, contractual obligations and accounts.

Another driver of workplace change is the desire for effectiveness and efficiency, which has led to the need for individuals to add value to the service they provide. This is especially the case for workers providing higher-level skills, like accountants. No longer is the accountant the person who just makes sure that the financial records are in order and meet auditing standards. Today, accountants are expected to do this, as well as assist companies with strategic planning and interpret financial information in ways that can be used by companies. This requires accountants to have good communication skills as well as good interpersonal skills.

Achieving synchronicity between trades involved in the same project is also a key aim of workplace organisation for builders in commercial or domestic construction sites. This has required a higher level of collaboration among the trades to ensure that each trade has ease of access and freedom from obstacles to complete their part of the construction. This especially affects bricklayers, who must be sure that the plumbing and electrical work has been done before their work can commence. Although specific sequences of activities for when certain parts of a job could be done have been devised, tradespeople seem to be more ready to respect the application of protocols and procedures, especially about issues that can affect safety.

An environment which has seen increased 'credentialism' among many sectors has also affected the IT industry. It has moved from a sector where the majority of IT professionals and technicians had no formal qualifications and often had science or maths backgrounds, to a workforce with formal qualifications.

Changes in the culture of retail stores have also changed the way that merchandisers work. They must keep in abreast of constant changes in fashion and trends and they must understand the look that the store wants to portray, especially to accord with different annual events and celebrations.

Increased need for cultural awareness and sensitivity

In some industries, the influx of workers and clients of diverse cultural backgrounds has also changed the environments in which people work, and in some cases the skills that need to be developed. Negotiation and conflict-management skills and cultural understanding are required in taxi dispatch roles, just as they are for those working in banking, property management, bar attending, and airline passenger service.

Increased language and cultural barriers have been experienced in the taxi services, banking and property management sectors. These have required taxi companies to implement cultural awareness training so that workers have a better understanding of the Australian culture and the freedoms available to both genders. The increased influx of international students in many cities has meant that property managers have also had to expand their use of interpreting services, and to be pro-active in property marketing activities.

The need to be sensitive to Indigenous cultures has affected those working in telecommunications sectors. This entails diplomatic negotiations with tribal elders to inform and gain support for laying down cables across tribal lands which may include sacred sites. It also entails cleaning up the areas and returning them to their natural state once trenches have been dug and cables positioned.

Changing levels of consumer demand

Across industry sectors, consumers have also become more outspoken and less afraid to express their demands to suppliers of goods and services. The advent of the global financial crisis and related negative press for banks have also altered the work environments for financial services workers as they try to deal with customers who are experiencing financial difficulties. Such new environments mean that those who come in contact with customers must have very good interpersonal and conflict-management and negotiation skills to deal with customer dissatisfaction and to try and preserve the customer's continued business.

The de-regulation of trading hours has also led to a change in customer habits for the retail industry. Accompanying this is the drive across industry for productivity gains and efficiency, which has often meant a reduction in staff. Having fewer staff to undertake ticketing and shelving has also meant that the speed at which these processes are done has had to be accelerated. Department store retailers have found that more people shop on weekends. They have responded by ensuring that they have more staff rostered on for work at these times. Long breaks at Christmas time are also a thing of the past for sales assistants, who need to be on hand to meet increased customer demand during the festive period.

Consumers have also changed the way they shop for properties and for travel services. This has meant that real estate and travel service companies have expanded the types of services offered, including online services. In all cases, this has led to an increased focus on marketing the business to gain market share.

A focus on increasing market share has also been a major change for business development officers dealing with superannuation in financial services companies. In the past they spent their time reacting to problems being experienced by clients. Today they need to be more pro-active in creating wealth by constantly searching for different sources for clients. No longer do they need the specific technical skills that were required 20 years ago because now they have access to specific computer programs to help them do this, or to dedicated personnel who will do the technical analysis for them. Today their key need is an aptitude for selling and advising.

Consumers are also not afraid to express dissatisfaction when what they have purchased does not meet with their approval. This applies to all industry sectors but especially to housing construction. We have been told that the work of bricklayers (especially those using mostly bricks in housing constructions, more popular in some cities or regions than others) has become more stressful, as consumers are not afraid to come on the job and to ask that certain things be changed and re-done because what they originally envisaged was not what they really wanted. Consumer demand for air conditioning, internet and telephone access and other electronic application has also affected the disposal of materials on construction sites. For example, where once bricklayers could dispose of the left-over mortar by dropping it into the nearest cavities, now these cavities house the different cables for telecommunications. This means that workers need to be much tidier. No longer does the bricklayer need only to be concerned with the structural appearance of the finished product, by

using good firm mortar, appropriate ties, and brackets screwed on to every four courses of bricks; now, he has to ensure the aesthetic appearance of the bricks around pipes and taps that protrude from external walls.

Consumer demand has also changed the stock held by retail stores, with stock that results in higher sales being favoured over that which is slow to sell. Information on these is provided by immediate electronic updates.

Drive for environmental sustainability

Concepts of, and government drives for, environmental sustainability have also affected work practices. Plumbers are increasingly installing solar heating and rain-water tanks. The sorting of paper and product waste materials (including oil and timbers) into recycling bins for collection occurs as frequently in workshops as in offices.

Environmental sustainability in the telecommunications sectors covers the need to dispose of asbestos and other dangerous productions according to the Environmental Protection Agency guidelines. The lead sheath or copper sheath in recovered cable is sold for recycling. Any iron work that is recovered is also recycled. Timber offcuts and other materials are also sorted into skips for recycling.

Environmental management has been embraced in some areas, with a dedicated mechanism for ensuring the obligations to protect the environment are met. On both large commercial construction sites and domestic sites, environmental management obligations mean that these sites must be kept clear, and waste must be carted away and sorted appropriately for recycling.

Frequency of changes across industry sectors

In table 1 we provide information on the frequency and impact of different types of changes identified in our consultations with enterprises.

Table 1 Frequency and impact of changes identified by enterprises consulted

	% of cases where impact of change was major	% of cases where impact of change has not been major	% of cases where the change has affected higher-level workers more than lower-level workers	% not sure
Automation and 'autonomation'	94.3	5.7	0.0	0.0
Cultural change (including diversity of backgrounds, consumer demand, different ways of working)	88.7	11.3	0.0	0.0
Compliance with legislation	69.8	30.2	0.0	0.0
Occupational health and safety regimes	71.7	22.6	0.0	5.7
Multiplication of tools	69.8	30.2	0.0	0.0
Disposal of waste and materials in environmentally responsible ways	58.5	37.7	1.9	1.9
Availability of new materials	45.3	54.7	0.0	0.0
Skills change	13.2	64.2	22.6	0.0

What does this mean for VET?

We find that the issues raised in our consultations with a range of enterprises and different industry sectors generally accord with the information provided by industry skills councils themselves. This is not surprising, as skills councils have far more elaborate methods for surveying and speaking to their industry sectors on a regular basis.

Our small survey illustrates how things have changed over the last two decades and shows that work practices have been affected by the social, regulatory and technical and technological environments in which skills are performed. In some cases there has been some de-skilling of occupations, as technological advances have often reduced the complexity or labour intensiveness of performing a skill for those charged with the production of physical goods or services, or the transformation of basic information. This is not to say that operations have become more straightforward in the new environments. Quite the opposite has occurred. At the same time that automation has decreased the tediousness of certain tasks, workers have had to be become more technologically savvy and adapt to new ways of working with upgraded or new applications that come onto the market. This requires extra perseverance and an increased acceptance of change. Employers are also more likely to talk about the increased impact of consumer demand and cultural diversification on products and services.

What does this mean for training? It is clear that employers want workers to be able to 'do the job' and be 'fit for duty'. This means that entry-level training (including on-the-job training) must develop the core requisite skills and knowledge of the occupation. This includes providing adequate access and awareness of new technology, equipment and materials that are currently being used on the job. Providers that do not have access to the latest technology, materials or equipment may need to investigate establishing close relationships with enterprises (including vendor companies) which do. For some occupations, the requirement to be able to understand and apply key software applications should also be supported by dedicated training. This is especially the case for trades and occupations involved in designing products.

Being 'fit for duty' is also required. This means making sure that workers do not come to work under the influence of alcohol or drugs, and being aware of all other occupational health and safety requirements. This should be covered both in entry-level training and in orientation training, when workers first come onto the job. We will find in subsequent sections that training packages provide a comprehensive treatment of the occupational health and safety competencies required in different industries.

How VET responds to change: an industry skills council perspective

We are interested to see how VET responds to change and so we focus on training packages, a principal component of the Australian VET system. Training packages provide a structured and systematic inventory of nationally endorsed competency standards and qualifications for recognising and assessing people's skills for a specific industry, industry sector, or enterprise. They can also used for the formal recognition of existing skills and the issuing of licences, registrations and accreditations developed by industry and endorsed by government.

Since their inception in 1998[1], the construction of training packages has required industry advisory agencies (currently industry skills councils) to undertake extensive consultation with industry stakeholders. The system of regular review and revision is designed to ensure that training packages remain current and take account of changing skill demands, changed regulatory frameworks, work practices, technology, and economic and environmental conditions.

Training packages are the basis for most of the training programs delivered in the VET system, but the name can be misleading as they are not designed to be prescriptions of how training is delivered or assessed. This has been left to the professional judgments of VET practitioners.

General approach to change

In-depth consultations with the chief executives of industry skills councils and/or their senior staff (generally those responsible for specific training packages) indicate that the development and expansion of units of competency and qualifications have been driven by changes in regulatory environments and workplace practice and advances in technology. They have also had to reflect changes in cultural norms, increasing concern with occupational health and public safety, issues of ethics and environmental sustainability. For this report, we focus on the major shifts identified by selected industry skills councils.

Industry skills councils have a variety of mechanisms to help them address change when it occurs. In the case of a minor change, the principle is always to maintain the integrity of the existing unit of competency. Skills councils do this by tightening up the language in the range statements. When a new technology or process is implemented in their industry sectors, the typical response is to create a new unit of competency. Industry skills councils may also combine a number of units of competencies into one skill set. This enables them to address a new process, extend coverage to occupations or tasks as yet to be covered by the relevant training package, or provide competencies for upgrading skills and knowledge of occupations already covered. Industry skills councils have also developed a range of user resources (including training materials and professional development workshops), and established registered training organisation networks and information-sharing processes. They have also established feedback mechanisms (like continuous improvement registers) for continuous improvement. Most recently they have been involved advancing the government's agenda for workforce development.

[1] Training packages were formally introduced in 1998, although there are instances where a few were completed and endorsed prior to this (for example, the Transport and Distribution Training Package).

Key drivers for change

Our consultations with industry skills councils indicate the following key drivers for changes in training packages.

Responding to consumer demand and public health and safety issues

The impact of changes in consumer and public health and safety demands is experienced by all industry skills councils, and especially by those dealing with hazardous materials and locations and physically dangerous activities. The development of the Chemical Hydro Carbons and Refining Training Package (PMA 08) is a case in point. Prior to its development, there were no qualifications for those who worked in chemical operations. This changed with the fire disaster experienced with the malfunction of the Longford Gas Plant in Victoria in 1998. This event highlighted the lack of formal training arrangements for this sector. The training package has now been adapted to include units of competency dealing with the prevention and management of internal incidents and external public relations, when such incidents get out of hand and become a public safety issue.

Reforms to the Transport and Logistics Training Package have also been driven by the need to reflect industry priority areas, and address qualifications for emerging job roles. The increased availability and use of transport tunnels and feedback from industry have seen the development of a skill set for road tunnel operators. Eight units of competency have also been developed for taxi drivers. These units provide the framework for the national harmonisation of licensing for taxi drivers. The industry skills council has also developed heavy vehicle driver licensing units in response to the Council of Australian Governments (COAG) agenda to align vehicle licence training with the Australian Qualifications Framework (AQF). Logistics skill sets for the defence industry have also been developed.

The development of units and skills sets to support the provision of mutual support across jurisdictions in times of emergencies (including bush fires) has also been planned for the Transmission, Distribution and Rail Training Package. Similarly, units in emergency response and preparedness have also been developed for 'shot firing' qualifications in the mining and extractive industries sectors (now rationalised into the Resources and Infrastructure 09 Training Package).

Service Skills Australia provides us with further examples of how their training packages respond to public and consumer safety issues. The Beauty Training Package now includes units of competency to ensure that beauty therapists have the necessary high-level skills to apply intense pulsated light and laser therapy techniques on customers without causing deep burns or permanent scarring. The industry skills council is now in discussion with the industry sector to identify the level of qualification and experience considered essential for therapists to be able to apply these techniques on consumers. The skills council is suggesting that before therapists apply such techniques, they should hold a postgraduate qualification (that is, a vocational graduate certificate) and have adequate experience in the industry. The Funeral Services Training Packages has included OHS units for workers responsible for lifting increasingly larger and heavier caskets into family graves. Similarly, the Community Pharmacy Training Package has had to respond to health regulations about what can and cannot be sold over the counter in pharmacy stores and to increasing consumer demand for health and medication advice in other areas, including wound care, diabetes and high blood pressure. The tightening-up of language to ensure that public safety in outdoor safety and recreation areas is addressed and the risk of danger minimised has been applied in the Sport and Outdoor Recreation Training Packages. The Diploma in Fitness has been expanded to recognise the role of the fitness instructor in preventative health. Issues with training providers delivering the diploma in short timeframes, however, continue to be problematic. The industry skills council would like to introduce units of competency to enable training to focus on special client groups, including those suffering from diabetes, arthritis, or obesity.

Public safety and public relations issues have also driven other industry skills councils to develop relevant units of competency for their sectors. The Construction and Property Services Industry

Skills Council has been keen to improve the image of its security guards or bouncers in response to negative publicity and the involvement of security personnel in altercations leading to injury and fatality. They are looking to re-badge the occupation and call workers 'venue controllers'. The aim is to soften the image and to focus on the development of professional and interpersonal skills. Manufacturing Skills Australia has implemented changes to the Hydro-Carbons and Refining Training Package to include units of competency addressing hazards in installing diesel and petrol tanks. This was also triggered by a fatality in the installation of this equipment. In December 2009, following the disastrous Victorian bushfires, Ee-OZ developed new competency standards to provide refresher training for electricity supply companies operating in Australia. These units were also provided in identified skill sets to provide access to electricity supply industry employees and contractors.

Responding to regulatory requirements

It is clear that other major drivers for changes in training packages include regulatory compliance and the need to address government policy initiatives. This includes the need for workers to acquire licences to be able to perform occupational roles or operate machinery and equipment, apply sustainable methods of working, and implement government future climate change policy.

Closer alignment between qualifications and licences has also been a key feature of training package responsiveness. The Construction and Property Services Industry Skills Council is undertaking a review of high-risk work licensing (dogging, rigging, scaffolding and tower crane erection and use).

Cross-jurisdictional issues continue to plague companies with national reach. These issues are also felt by industry skills councils. Current COAG initiatives for harmonising licensing regimes in the establishment of the National Licensing System provide some hope for the future, especially for the real estate, plumbing and gas-fitting, security operations, and transport and logistics sectors. The maritime industry has traditionally had multiple regulators (including states and territories, federal government, and international regulators). COAG has recently agreed for the current national regulator, the Australian Maritime Safety Authority (AMSA) to become the single regulator. This means that the industry skills council must ensure that the Maritime Training Package has additional qualifications for blue water and ocean-going occupations. Qualifications for coastal water occupations will also have to be restructured. These developments will lead to clearer pathways. Skill sets are also proposed to address endorsements to maritime qualifications, as required by regulations and other specific needs.

Cross-jurisdictional variations in funding, nominal hours, and program durations are also felt to be problematic. Across industries, industry skills councils are keen to see national consistency in these implementation regimes.

The Financial Services Training Package has been and will continue to be highly affected by regulatory requirements. The onset of the global financial crisis has meant that COAG is looking to regulate consumer credit and finance broking more stringently. To this end, the Australian Securities Investment Commission (ASIC) will take over as the single regulator. The Commonwealth will thus have legislation to regulate home loans, personal loans, credit cards, consumer leases, overdrafts and line of credit accounts, among other products and services. The training package will also have to address units of competency for those who want to take the Australian Credit Licence test. Currently, Innovation and Business Skills Australia (IBSA) is working with the Australian Securities Investment Commission to develop the required units. The Certificate IV in Workers' Compensation and Certificate IV in Book-keeping have also been introduced.

Increasingly, those responsible for developing training packages will need to address government initiatives for sustainability and clean energy. For example, electro-technology and energy utilisation standards will have to reflect Australian Government Renewable Energy initiatives and meet the accreditation requirements of the Clean Energy Council for installers and/or designers of grid-connected solar systems.

Responding to advances in technology and innovative products and practices

Technological advances (especially the introduction of digital technologies) and innovations have required adjustments to training packages across industry sectors.

The Telecommunications Training Package has also had to reflect new occupations (including broadcast technologists) and functions (including digital reception and radio communications) brought about by the National Broadband rollout. A convergence between information technologies and telecommunications is envisaged with the uptake and expansion of cloud computing technologies, where applications can be accessed over the internet. Units of competency dealing with 'optic fibres' and 'fibres in home' are also being considered.

Composite fibre technologies used in construction of walers for floating walkways, bridge beams, ridge girders, shells of aircrafts have also been considered in units of competency in the Competitive Manufacturing Training Package. However, this has raised issues such as the lack of a 'composite fibre tradesperson' occupation in Australian and New Zealand Standard Classifications of Occupations (ANZSCO).

Across many manufacturing sectors, surface cleaning and coating structures are becoming increasingly important, in line with concerns about reducing corrosion and maintaining clean environments. Manufacturing Skills Australia has responded to this demand by investigating a new qualification for workers who are required to clean and coat structures at risk of corrosion, including the insides of containers used for chemicals.

The recent review of the Automotive Training Package considered changing technologies, including hybrid-drive vehicles, alternative fuels and new materials in painting and panelling. It is looking at the integration and merging of technologies in engine management, transmission and suspension in passenger and commercial vehicles, earthmoving and mining equipment, remote-controlled vehicles and self-drive vehicles.

Increasing use of digital signage, LED low-voltage lighting systems and computer-aided planning and drafting systems have led to relevant units of competency in the Construction Training Package. The development of biometric technologies (including facial recognition, iris scanning, finger scanning), advanced technology in surveillance systems, and spatial information services have also resulted in the development of additional units of competencies in the Property Services Training Package. These will also require additional upgrading in line with any further advances in the technology itself.

Technological advances in radio frequency identity tags (that is, tiny tags comprising a microprocessor, an antenna, and an identification code embedded in store or warehousing items), track and trace systems, and automated warehousing have also been reflected in the Information Technology and the Transport and Logistics areas. Advances in audio frequency identification technology have also led to considerations of e-security units in the Information Technology Training Package, while scanning technologies and direct connection with suppliers have been addressed in the Retail Services Training Package. The increased use of online sales and transactions in the real estate sector has also had to be reflected in the Property Services Training Packages. Automated mining, a goal of the larger mining companies like Rio Tinto, will also need to be reflected in the training packages for the mining sector.

Regular adjustments to units of competency in the Hairdressing Training Package often deal with new products that reduce hair damaging, techniques to create a special look (for example, hair extensions) and new equipment. Greater use of audiovisual technology in funerals and the use of different procedures and chemicals for embalming have also had to be reflected in the Funeral Services Training Package.

The majority of industry skills councils say that the typical way for addressing new technologies is either to create a new unit of competency if it is a major technological advance, or to reflect minor changes in the range statements.

Responding to increased government demand for environmental sustainability

VET responses, driven by demands for environmental and economic sustainability, often overlap with those driven by advances in new technologies, requirements for regulatory compliance and occupational and public health and safety. Consumer demand for environmentally friendly cleaning and waste management is also a driver of change.

The government focus on the green economy has required industry skills councils to provide workforce development responses and training solutions for existing workers. In May 2009 the industry skills councils provided their response to existing units and strategies they have in place to meet the requirements for environmental sustainability. These responses resulted in a report *Environmental sustainability: an industry response* (Industry Skills Councils 2009). In this report environmental sustainability was defined as requiring 'the design and provision of products and services that incorporate and promote waste minimisation and the efficient and effective use and re-use of resources'. The guiding principles for addressing environmental sustainability in training packages support appropriate and industry-specific workforce development strategies, which are appropriately timed. Sectors affected by compliance requirements are far more likely to be early developers and adopters of new technology and work practices. Such products and processes must also add value and not inflict unnecessary burdens on enterprises. Each industry skills council that provided input to the report identified the specific units that had been developed to address issues of environmental sustainability.

Modifications have been made to certificate III programs to incorporate issues of sustainability as well as environmental accountability in general construction. Lower-level units prepare apprentices to work in a sustainable way (that is, to reduce waste, select better materials, and operate more effectively). Units dealing with reducing wastage, managing grey water, and using treated water for watering parks have been added to plumbing qualifications. Units preparing students to minimise waste on-site, select readily disposable building materials, and understand efficiency of different applications have been added to certificate IV qualifications in building design. The Certificate III in Painting and Decorating has also adopted changes related to the efficient use of water in cleaning brushes.

In 2008 a unit aimed at developing the necessary work practices and technology to reduce emissions that are harmful to the environment ('Prevent ozone depleting substance and synthetic greenhouse gas emissions') was incorporated into the Construction Training Package (CPC08). A review of units dealing with asset maintenance has also identified the need for developing higher-level skills in pest detection and control, the need to decrease the chemical content used in various applications as well as the reducing the risk of contamination. New qualifications for advanced fire services management and hydraulic designing are planned for the Construction, Plumbing and Services Integrated Framework Training Package. Manufacturing Skills Australia's response are units aimed at developing competencies to 'participate in environmentally sustainable work practices', 'implement and monitor environmentally sustainable work practices', and 'develop workplace policy and procedures for sustainability'.

The transport and logistics sector is another industry sector which is especially affected by increased demand for environmental and economic sustainability. Regulatory reform has been aimed at ensuring the coordination of all levels of government to build an efficient, safe, sustainable, accessible and competitive transport system.

New units and qualifications to address issues of climate change, energy efficiency, sustainability and renewable energy will also be developed for the electro-communications and utilities sector. In 2009 the National Quality Council endorsed a new certificate IV qualification for photovoltaic

systems (Certificate IV– Photovoltaic Systems) developed by Ee-OZ in response to emerging and continuing needs for renewable energies. The qualification included a new unit: 'UEENEEK048A Install, configure and commission grid connected photovoltaic power systems'. Modifications were also made to existing units which dealt with solving problems with photovoltaic energy apparatus, designing grid-connected power supply systems, and installing and setting up interval metering. A post-trade skill set comprising these units was developed for installers and designers of grid-connected photovoltaic systems. These changes were aimed at domestic and commercial installations to meet provisions of new government renewable energy initiatives, and clean energy accreditation requirements for installers and designers of grid-connected solar systems. New competencies and qualifications have also been developed for the energy generation sector including wind turbines, solar farms, fuel cells, co-generation systems, and hybrid systems.

The green agenda has also been addressed by modifications to units related to water usage and wastage in the Hairdressing Training Package. The Business Services Training Package has three units dealing with sustainability and environmental issues, while units devoted to recycling and handling lead have been incorporated into the Telecommunications Training Package. Cost-cutting and minimising waste has also been a key aim of the Information and Communications Technology Training Package. Units related to carbon trading are also envisaged for the Financial Services Training Package. The Metal and Engineering Training Package has already incorporated units required to address greenhouse gas licensing requirements.

Units aimed at the prevention of pollution, preservation of current levels of consumption, implementation of cost-cutting measures and improvement of the bottom line have also been addressed in the Resources and Infrastructure Training Package. Increasingly, the focus will be on reducing greenhouse gases and emissions. Skills DMC (Drilling, Mining and Coal) is currently looking at scoping a report which addresses the issue of sustainability in the mining sectors.

In table 2 we provide a sample of units of competency established by industry skills councils to deal with the issue of environmental responsibility. An expanded list taken from the industry skills councils' publication, which reports on their responses to environmental sustainability, appears in appendix C of the support document.

Responding to more efficient and appropriate ways of working

Being efficient through the streamlining of activities and minimising time and materials wastage has been especially important. There has been a resurgence of the concept of lean manufacturing. This approach is especially reflected in the development of units in the Competitive Manufacturing Training Package aimed at incorporating principles from the Japanese 5S system. The main aim here is to streamline work processes and production environments to increase time efficiency and reduce wastage of materials. Just-in-time production and delivery to clients is also a key feature.

Modifications to units of competency have also encompassed ethical work practices. This has been especially evident in the Funeral Services Training Package, where more respectful and culturally sensitive practices are encouraged, and in the Financial Services Training Package where effects of the global financial crisis have hastened the focus on ethical behaviour in the provision of advice on suitable financial products.

Responding to the government's workforce development agenda

Industry skills councils are gradually recognising the need to help enterprises implement concepts and processes of workforce development, with most skills councils having developed a workforce development strategy. The approach taken by Skills DMC brings industry skills council personnel into the workplace to consult with managers, identify needs and present and broker training solutions to meet these needs. They make use of two tools, the 'Future Workforce Manager' tool and the 'Skills Maximiser'. The first is used to help enterprises plan for their workforce development and identify training gaps; the second is used to match training gaps for specific

occupations and people with relevant training package requirements. The Skills DMC adviser will use the findings of consultations with managers, workforce projections, and training needs analysis to compile a workforce development report. Once an enterprise's workforce development report is complete and accepted by the enterprise concerned, the Skills DMC adviser will then broker training with appropriate registered training organisations. In doing so, the adviser may use funds from the federal government's Productivity Places Program to help purchase training for new entrants and existing workers. Skills DMC aims to monitor the effectiveness of this training through regular progress reports. The industry skills council has already developed a number of these reports, but as a process this is still in its early stages.

Table 2 Examples of environmental sustainable units by industry skills councils

Industry skills council	Sample of units in training packages covered by industry skills councils
Agrifood	RTE4203A Implement a property improvement program
	RTE5524A Develop and implement sustainable land use
Community Services and Health	HLTPOP216B Monitor and maintain septic or on-site systems
	HLTPOP217B Monitor and maintain sewerage or effluent systems
Construction and Property Services	CPCCBC4019A Apply sustainable building design principles to water management systems
	CPCCBC4020A Build thermally efficient and sustainable structures
Electro-comms and Energy Utilities	UEENEEK012B Provide basic sustainable energy solutions for energy reduction in domestic premises
	UEENEEK013B Apply sustainable energy solutions to energy reduction in domestic premises
Government Skills Australia	NWP101A Investigate sustainable water cycle management
	NWP202B Apply environmental and licensing procedures
ForestWorks	FPICOR2203A Follow environmental care procedures
	FPICOR3201A Implement SHE policies and procedures (SHE: safety, health and environment)
Innovation and Business Services Australia	BSBSUS201A Participate in environmentally sustainable work practices
	BSBSUS301A Implement and monitor environmentally sustainable work practices
Manufacturing Skills Australia	MCMT272A Participate in environmentally sustainable work practices
	MCMT472A Implement and monitor environmentally sustainable work practices
Skills DMC	MNCO1120A Establish waste and by-product management system
	MNCO1121A Implement site waste and by-product management plan
Service Skills Australia	SISOOPS201A Minimise environmental impact
	SISOOPS304A Plan for minimal environmental impact
Transport and Logistics	TLIU707B Care for the environment (available to all certificate II level qualifications)
	TLIU107B Implement and monitor environmental protection policies and procedures (available for all certificate IV qualifications)

Source: Industry Skills Councils (2009).

Responding to client feedback and the need for rationalisation

Under the new continuous improvement approach to training package reviews and endorsement, industry skills councils are asked to have a 'continuous improvement plan'. The general approach is to have an issues register, where any stakeholder or individual can provide a comment. Industry skills councils have various ways for responding to these issues, often using a priority system to work through issues.

A major task for all industry skills councils has been the rationalisation of training packages to identify commonalities across sectors and to reduce the need for the importation of units between training packages. For example, Skills DMC has rationalised its training packages into the Resource and Infrastructure Training Package (RII 2009). Service Skills Australia has reduced its 14 training

packages into eight training packages. These activities have been quite resource- and time-intensive, but have been useful in ensuring a more streamlined approach to the packaging of competencies across industry sectors.

Addressing the needs of existing workers

The Transport and Logistics ISC has developed a new qualification (Certificate IV in Aviation Leadership and Supervision) to respond to requests from the airline industry to have a pathway for air crew returning to ground duties. There have also been units developed to ensure that maritime occupations which were not really covered by the maritime regulations had basic training in occupational health and safety and employability skills before going out to sea. This included waiters and crew on tourist boats.

The Diploma in Salon Management has been introduced to help those who run a salon with the skills required for ordering products, undertaking payroll activities, banking and hiring and firing. Because a lot of upskilling for hairdressers is delivered by vendors, the industry skills council is also investigating how to get these vendor-delivered competencies integrated into qualifications. The industry skills council has also been keen to ensure that hairdressing students who are not following a traditional apprenticeship acquire the requisite work experience. It has added workplace units to ensure that this occurs.

In many cases the modifications that are made aim to increase the scope of the training package to cover occupations that have not been covered before, or to extend the scope to new occupations (as witnessed in the maritime, telecommunications, and manufacturing sectors). The scope has also been increased to enable qualifications to be undertaken via VET in Schools programs.

What does this mean for VET?

Industry skills councils have identified the key drivers of changes for VET and have responded to these by adjusting existing units of competency (generally in range statements for minor changes) or added new units of competency when there are significant changes or emerging issues. Their close connections with industry have enabled them to remain in touch with general developments. Increasingly, they are focusing responsibilities on tasks and activities which enable them to add value to industry training. They have also been proactive in developing networks and collaborations so that they remain responsive. Having bodies such as industry skills councils dedicated to identifying industry requirements and translating these into units of competency which provide direction for training and assessment has merit. This leaves training providers to concentrate on training provision.

Industry skills councils continue to be concerned about issues relating to the system's lack of acceptance of knowledge units for occupations in which understanding of theory is required for effective workplace performance. This is especially the case for qualifications under the responsibility of Service Skills Australia. For example, beauty therapists need to understand anatomy, skin biology, and physiology. This has led the industry skills council to develop units of competency which basically deal with underpinning knowledge but which are described in terms of their application to the workplace. The concept of students acquiring requisite knowledge in upfront training and then returning to complete a vocational graduate certificate once time has been spent time in the workforce is being explored by the Services Skills Council. A similar concept is also being explored by Skills DMC for its Diploma of Geo Science, where the qualification would be awarded once the student had spent time on the job.

Achieving parity among qualifications also continues to be an issue. To this end, the Services Skills Council has applied weightings to ensure that concepts of equivalence of effort are applied across sectors. There continue to be concerns about the quality of assessment processes, especially the qualifications of assessors. For the last ten years the Services Skills Council has tried to have the

qualifications of assessors spelled out more specifically. Also important has been the specification of the types of equipment necessary for the assessment of competencies. That industry skills councils make requests for the explicit specification of equipment and facilities is justified by instances of poor replications of workplace environments. Service Skills Australia is also keen to have people with the 'right attitudes' and there is a continuing concern that the 'soft skills' are not being addressed sufficiently.

Issues relating to the amount of time required for endorsement even under the continuous improvement program continue to frustrate industry skills councils. Industry skills councils believe that they are able to improve their speed to market but that at times their ability to do so is hampered by the amount of time that state training authorities take to endorse the programs.

There is also concern about the completion results for different training packages, especially those with high numbers of skill sets (which do not get reported in the Australian Vocational Education and Training Management Information Statistical Standard [AVETMISS]) and where provision is undertaken on a fee-for-service basis. There is a view that skill sets need to be given some status in national reporting.

Issues about the national portal for accessing information on training packages continue to frustrate industry skills councils.

A detailed account of the main issues highlighted in interviews with industry skills councils is provided in appendix B of the support document.

Accredited courses

In theory, nationally accredited courses are designed to provide skills development for areas which are as yet to be covered by training packages. As such, they are a useful mechanism for implementing programs aimed at covering new work practices and changing skill demands. The *Users' guide to the Standards for Accredited Courses* (Australian Quality Training Framework 2007) outlines the following reasons for having such courses and the benefits that can accrue to individuals, registered training organisations and employers by the availability of such courses.

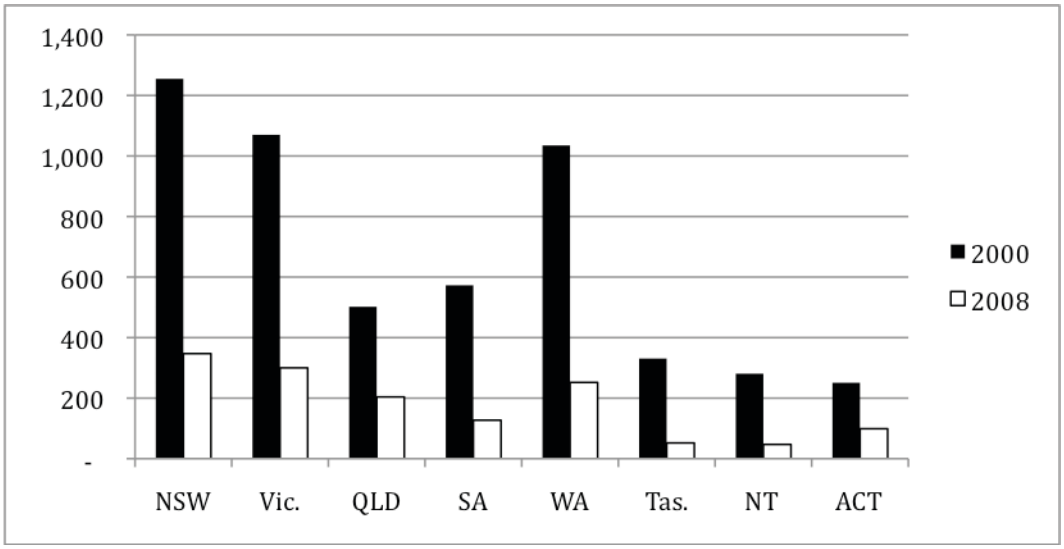
> Accredited courses have been designed to address the skill requirements for industry, enterprises and the community where these are not covered in nationally endorsed Training Packages. They also have the capacity to address changes in skill needs in a responsive manner, including changes to the needs of: emerging industries and sectors; and converging industry sectors … In some industries, accreditation of a course may be a requirement for insurance for the RTO in delivery of the course, or for the graduate to obtain an occupational licensing outcome. It can be an important marketing tool for RTOs, as it is evidence of national recognition enabling portability of qualifications.

Courses that are accredited can be included on the Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS), which means that they can be marketed and delivered to international students. Both those who participate in accredited courses and employers may be eligible for financial assistance. A course may need to be accredited so that participants in the course are eligible for AUSTUDY, ABSTUDY and other entitlements.

Reducing the number of accredited courses

Since the inception of training packages there has been a general move to constrain the multiplication of accredited courses and to ensure that courses are only accredited if they cannot be covered by existing units of competency in relevant training packages. We find that between 2000 and 2008 the number of accredited courses across states and territories has decreased substantially (see figure 1).

Figure 1 Number of nationally accredited courses (excluding training packages) by state, 2000 and 2008



Source: National VET Provider Collection, 2008, unpublished data.

The push for state and territory accrediting bodies to reduce the number of accreditations of new courses where units of competency already exist in training packages seems to have worked. Across the country, participation in national training package qualifications has increased almost three-fold between 2000 and 2008, while participation in nationally accredited courses has decreased dramatically (see table 3). This pattern is repeated across states and territories. The picture is mixed for locally accredited courses.[2] Here, the number of students enrolled in these courses has increased for Victoria, Western Australia, Tasmania and the Australian Capital Territory.

Table 3 Vocational students by state/territory and type of accreditation, 2000 and 2008

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
2000									
National package	107 862	116 199	71 641	31 098	19 888	14 533	7 789	8 291	377 301
Nationally accredited	312 346	218 228	146 772	51 409	102 386	15 812	10 682	11 370	869 005
Locally accredited	215 353	53 579	48 115	49 626	6 378	1 323	401	530	375 305
Subject only – no qualification	2 397	80 193	0	479	0	357	2 872	0	86 298
Total	**637 958**	**468 199**	**266 528**	**132 612**	**128 652**	**32 025**	**21 744**	**20 191**	**1 707 909**
2008									
Training package	309 710	284 140	221 066	61 749	106 118	38 992	16 960	17 094	1 055 829
Nationally accredited	78 208	64 979	47 150	13 726	31 029	3 923	2 905	3 013	244 933
Locally accredited	118 761	85 910	23 084	32 493	11 989	3 337	102	4 577	280 253
Subject only – no qualification	40 874	54 999	0	17 303	0	0	2 251	0	115 427
Total	**547 553**	**490 028**	**291 300**	**125 271**	**149 136**	**46 252**	**22 218**	**24 684**	**1 696 442**

Note: Some states do not make it possible for students to enrol in subject-only courses; that is why there is no participation reported for Qld, WA, and the ACT.

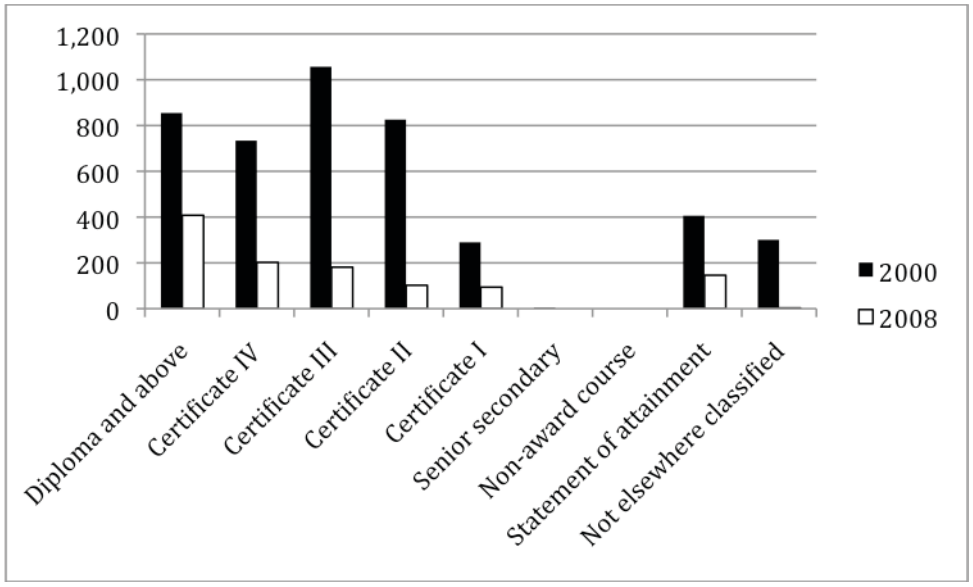
Source: National VET Provider Collection, 2008.

[2] Locally accredited courses include a vast array of government-funded courses which must meet some formal requirements. They are included here for completeness.

Level of qualification

Around 60% of nationally accredited courses were pitched at the higher-level qualifications (that is, certificate III, IV and diploma and above) in 2000 (figure 2). In 2008 these accounted for an increased share of all qualifications (up 9% from 2000 figures). The pattern of accredited courses being pitched at higher-level qualifications is repeated in 2008; however, certificate III qualifications have dropped their share of the total. Where they represented almost a quarter of all courses in 2000, their share dropped to 15.9% in 2008. This is understandable as training packages' coverage of most certificate III courses increased over the decade.

Figure 2 Nationally accredited courses by qualification level, 2000, 2008



Source: National VET Provider Collection, 2008, unpublished data.

In table 4 we present information on the number of nationally accredited courses (excluding training packages) by state/territory and qualification level for 2000 and 2008. Here we find that in 2008, across all states and territories, there has been a decline in the total number of accredited courses in line with the aim to reduce the need for accredited courses where areas are covered by training packages. Across the board (with the exception of the Northern Territory) there has been an increase in the share of courses aimed at diploma and above qualifications. For some jurisdictions there has also been an increase in the share of certificate IV courses. Across the board in 2008 there has been a decline in accredited courses aimed at certificate III qualifications.

In 2000 around 80% of all nationally accredited courses were provided by TAFE (technical and further education) institutes and other government providers (see table 5). This continues to be the case in 2008. Community providers account for 6.1% of nationally accredited courses in 2000. They increase their share to 9.1% in 2008. Other providers account for 15.8% of total courses in 2000; their share decreases to 10.9% in 2008.

Table 4 Number of nationally accredited courses (excluding training packages) by state/territory and qualification level, 2000 and 2008[(a), (b)]

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
2000									
Diploma and above	182	211	93	130	177	61	37	90	855
Certificate IV	194	176	97	103	181	47	37	40	734
Certificate III	299	209	151	163	276	84	78	64	1057
Certificate II	263	183	111	117	244	67	51	31	826
Certificate I	72	56	40	27	88	35	25	6	290
Senior secondary	0	3	0	0	0	0	1	0	4
Non-award course	0	0	0	0	0	0	0	0	0
Statement of attainment	195	119	7	0	8	34	47	1	406
Not elsewhere classified	61	117	3	33	61	5	5	19	301
Total	**1266**	**1074**	**502**	**573**	**1035**	**333**	**281**	**251**	**4473**
2008									
Diploma and above	95	137	52	47	77	12	5	43	408
Certificate IV	44	69	35	28	48	5	9	26	202
Certificate III	76	39	26	22	40	9	8	13	181
Certificate II	37	31	15	19	20	9	11	9	102
Certificate I	37	23	18	10	32	9	11	7	94
Senior secondary	0	0	0	0	0	0	0	0	0
Non-award course	0	0	0	0	0	0	0	0	0
Statement of attainment	57	1	58	1	32	8	3	1	146
Not elsewhere classified	0	0	0	0	3	0	0	0	3
Total	**347**	**300**	**204**	**127**	**252**	**52**	**47**	**99**	**1136**

Notes: (a) A nationally accredited course can be delivered in more than one state. For this reason, the sum of state and territory data is greater than the Australia figure.

(b) The same course may have more than one qualification level in 2000. This does not occur for 2008 data, as the data are validated with course information on the AQF level from the National Training Information Service (NTIS).

Source: National VET Provider Collection, 2008.

Table 5 Number of nationally accredited courses (excluding training packages) by state/territory and provider type, 2000 and 2008[(a)]

Providers	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
2000									
TAFE and other government	950	957	442	504	1035	282	201	214	3925
Community	113	196	3	0	0	15	0	0	311
Other	308	221	134	106	0	51	101	38	799
Total	**1371**	**1374**	**579**	**610**	**1035**	**348**	**302**	**252**	**5035**
2008									
TAFE and other government	312	276	172	115	244	47	35	95	1069
Community	35	64	22	0	23	0	0	0	122
Other	5	26	61	14	31	6	20	4	146
Total	**352**	**366**	**255**	**129**	**298**	**53**	**55**	**99**	**1337**

Notes: (a) A nationally accredited course can be delivered in more than one state. For this reason, the sum of state and territory data is greater than the Australia figure.

(b) The same course may be delivered by more than one provider type, which results in an inflated total number of nationally accredited courses for each state and territory and Australia.

Source: National VET Provider Collection, 2008.

The types of courses that are nationally accredited

We can also get a national picture of the types of accredited courses by looking at the field of studies (used in 2002) and field of education (used from 2002 onwards when there was a break in series) associated with them. We find that since 2000 there has been a decline in nationally accredited courses in the fields of education mostly covered by training packages. We provide a breakdown of what the picture looks like for the nation as a whole in table 6 and for each of the states and territories in appendix D of the support document.

Table 6 Number and percentage of nationally accredited courses by field of studies and field of education, Australia, 2000, 2008

2000[(a)]			2008[(a)]		
Field of studies	No. of courses	% of courses	Field of education	No. of courses	% of courses
06 Engineering, surveying	912	19.9	03 Engineering and related technologies	219	18.8
04 Business, administration, economics	624	13.6	08 Management and commerce	96	8.3
03 Arts, humanities and social sciences	588	12.8	09 Society and culture	156	13.4
11 Services, hospitality, transportation	566	12.3	11 Food hospitality and personal services	10	0.9
07 Health, community services	494	10.8	06 Health	79	6.8
01 Land and marine resources, animal husbandry	384	8.4	05 Agriculture, environmental and related studies	58	5.0
02 Architecture, building	349	7.6	04 Architecture and building	102	8.8
12 VET multi-field education	282	6.1	12 Mixed field programs	190	16.4
09 Science	217	4.7	01 Natural and physical sciences	24	2.1
05 Education	96	2.1	07 Education	71	6.1
08 Law, legal studies	48	1.0	--	--	--
10 Veterinary science, animal care	26	0.6	--	--	--
--	--		02 Information technology	17	1.5
--	--		10 Creative arts	140	12.0
Total	**4586**	**100**		**1162**	**100**

Note: (a) In 2002 there was a break in series and data were reported according to field of education rather than field of studies used in 2000.

Source: National VET Provider Collection, 2008.

We are also keen to see how the coverage of nationally accredited courses across states and territories has changed over the last decade. We look at the specific titles of courses to get a better feel for what they are about. We take a total of 200 courses selected at random from the list of nationally accredited courses for 2000 and another 200 courses also selected at random from the list of nationally accredited courses for 2008. We find that it is quite difficult to find any clear patterns between the two time periods (table 7). However, by 2008 the list of foreign languages available has expanded to include Korean, Japanese and Indonesian. Teaching English as a second language (TESOL) begins to make an appearance in 2008, presumably to enable teachers to acquire qualifications that will let them provide training for the international student market and to non-English speaking immigrant and refugee groups. Also evident in 2008 are courses aimed at helping people return to work, as well as providing wider opportunities for women to engage in vocational education and training. This focus may be a reflection of VET's attempt to respond to policy

initiatives to get the nation working. Topics about environmental sustainability, health and monitoring techniques appear in 2008, in line with current interest in the whole topic of environmental impact. Where there was more of a focus on multimedia in 2000, the focus naturally shifts to digital media in 2008. Our brief analysis indicates that in some ways accredited courses help VET respond to gaps and changing demands. Take, for example, courses aimed at developing electrical skills in renewable energy or those aimed at developing skills and knowledge in environmental monitoring and technology skills, and digital media. These topics were not covered by courses in the 2000 data but appear as topics in 2008.

Table 7 Topics of nationally accredited courses by industry area for 2000 and 2008

2000	2008
Agriculture	
Agriculture, aquaculture and land care	Aquaculture, equine, Road Traffic Authority examiner, Road Traffic Authority inspection
Community services and health	
Child care, aged care, disability support, prosthetics, homeopathy, audiometry, drug use issues, medical technician, nursing, occupational health and safety	Assistive technology, domestic and family violence, first aid anaphylaxis, nursing, occupational health and safety, physiotherapy assistance, volunteer, wound care
Building and construction, mapping and surveying, and spatial information	
Building and construction fit-out and finish, plumbing, woodcraft, surveying and mapping, cabinet-making, job preparation in cabinet-making, furnishings, spatial information, surveying	Architectural technology, builder's registration, building design, building studies – residential, drafting, built environment, construction, demolition supervision, furnishing, interior decoration, joinery, landscape, painting, plumbing, tiling, construction, hydrography
Mining	
Metalliferous mining	Surveying – mining and engineering, entry to mining services
Electrical, electronic	
Electrical engineering, control, electro trades, television service, electronics, radio service, electronics, gasfitting	Electrical service, electrical engineering, electrical technology, electronic engineering, fire technology, gas-fitting, refrigeration and air-conditioning, renewable energy, gas-fitting
Security	
	Forensics criminal investigation, computer forensics
Forestry	
Forestry – harvesting, timber manufacture, merchandising	Forestry – saw doctoring, wood machining
General education, language, literacy and numeracy, foreign languages, and work education	
General education – reading and writing for adults, foreign languages (Japanese, Mandarin, French, Italian), IELTS preparation, advanced English, vernacular language, applied maths, preparatory maths science, further education, orientation to learning, ESL, work education, certificate of vocational education and training	General education – adult literacy, numeracy, vocational literacy, literacy tutoring, language, literacy and numeracy practice, English language skills, adult literacy foreign languages (Korean, Japanese, Indonesian, French, Italian, Spanish), TESOL, developing independence in training and development, vocational preparation, workforce re-entry, certificate and graduate certificate in vocational education and training, keys to employment, applied vocational skills, industry skills study, work education, wider opportunities for work, employability skills, work education
Environmental issues	
Conservation, council operation – preventing stormwater pollution	Environmental health, sustainability, environmental monitoring and technology
Business, and financial services	
Advertising, business management and administration, credit management, trade facilitation, community trades	International business, management communication
Financial services – counselling	Banking and finance

2000	2008
Information and telecommunications technology	
Information technology – applications, systems, programming, computing, small computer systems, multimedia	Digital media
Telecommunications – cabling, call centres, telecommunications technology	
Arts, design and printing	
Design	Applied design
Fine arts, photography, studio ceramics	Fine arts, visual art, graphic arts, photography, theatre
Pre-press, design and technology, textile design and printing	Graphic design
Library services	
Library services	
Indigenous	
Indigenous – transitional studies, ATSI health, primary health care, community development	Indigenous – learning pathways, transition education, cultural awareness, career development, education diploma, justice, teaching assistants, working with indigenous children
Manufacturing	
Automotive – servicing, light vehicle, brakes, heavy vehicle, automotive development, vehicle industry studies	
Food and wine – cellar procedures, food processing, wine	Food and wine operations, wine technology
Ceramics – industrial	
Engineering – fitting and machining, mechanical fabrication, welding, pre-employment, advanced engineering, aerospace, manufacturing systems	Manufacturing technology, mechanical engineering, pre-trade mechanical/marine craft construction), civil engineering
	Naval architecture, product design and development, detail drafting
Fashion garment maker, clothing industry studies, millinery, apparel manufacturing, Indigenous Australian arts	Fashion design
Glass and aluminium	
Laboratory skills	
Marine skills	
Pharmaceuticals	
Polymer technology	
Textile manufacture	
Services skills	
Personal services – massage, hairdressing – salon practice, hairdressing seminar	Gents' hairdressing
Sport and recreation leisure and health, sport and recreation administration	
Hospitality and tourism (food and beverage, housekeeping, gaming) meat retail, hotel management, tourism	Casino games
Meat industry – slaughtering, boning, and general operations	
Retail – McDonald's, retail management, pharmacy and optical dispensing, and supervision	Retail – visual merchandising
Cleaning – care for textiles	
Transport	
Transport aviation, road transport	

Source: National VET Provider Collection 2000, 2008 (unpublished).

We can use information about accredited courses in 2007, 2008 and 2009 in South Australia to indicate the types of skill and knowledge that seem to be popular with those seeking to deliver new courses. By far the most frequent areas covered for 2007 were alternative or natural medicine therapies and treatments, and Christian ministry areas. In 2008 the pattern changes, with both these areas disappearing. The most frequent accredited courses are in fashion. In 2009 there are four courses and these are all in the areas on Christian ministries. It is also noteworthy that in 2007, 2008 and 2009 most of the courses are aimed at certificate III, certificate IV, diploma and advanced diploma qualifications (table 8).

Table 8 Number of course accreditations by general skill area, 2007, 2008 and 2009[a]

2007	2007	2008	2009
Natural and alternative medicine, therapies and treatments	25		
Business	2	1	
Design		2	
Hospitality		2	
Policing		2	
Fashion		6	
Indigenous culture	1		
Interpersonal relations: dealing with aggressive and violent behaviours	3		
Women's education		3	
Christian ministries and related areas	8		4
Steam-related operations		3	
Volunteering		1	
E-learning		1	

Note: a Courses with start dates in 2007, 2008 and 2009.

Source: South Australian accredited courses, unpublished data.

Information from Queensland indicated that a sample of 54 nationally accredited courses across 12 industry areas included construction, manufacturing (textiles, clothing and footwear, chemical, hydrocarbons and oil refining), personal services, beauty, sport fitness, road, aviation, marine, business services, and mining. Almost two-thirds of the total number of courses were accounted for by construction, business services and road transport sectors.

In fact, 70% of all of these courses led to an AQF qualification, with 70% of the qualifications at certificate IV or above. There are very few certificate III courses, with those pitched at this level dealing with compressed air work in the operation of man-locks (tunnelling and caissons), operation of swinging stage scaffolds, spa water maintenance technology, and styling (fashion, image and media). Accredited courses were developed and accredited for these areas because they were perceived not to be covered in the training package. The only certificate I course is for pre-apprenticeship construction skills (this was a re-accreditation).

Of this sample of courses, the great majority are accredited because the topic is perceived not to be covered in the training package or to satisfy requirements expressed by industry, government, or community stakeholders. A small number of courses are aimed at preparation for licences or permits (including for asbestos removal, airline transport pilots [aeroplane or helicopter], and owner–builders). At times, the same topic area has a number of qualifications associated with it. Table 9 provides a list of courses by industry area or activity. We must also keep in mind that, especially in the case of occupational health and safety, there are state-specific regulations and courses are developed to address this need, not because a training package is not available for the particular qualification.

Table 9 Content area covered by accredited course by industry sector

Construction	Business services
Asbestos removal	Leadership support
Demolition	Journalism – re-accreditation
Compressed air work (lock operator) – tunnels and caissons	Business coaching
Swinging stage scaffold	Estate and succession planning
Construction material testing	Business administration (general, project management, tourism)
Spa water maintenance technology	National Indigenous Legal Advocacy – re-accreditation
Pre-apprenticeship (re-accreditation)	Pre-training indicator for language, literacy and numeracy and career preferences
Plumbing engineering hydraulics – mid-level management	Strategically managing the media
Self-erection/installation swing stage scaffolds	Sales management
Lightweight steel framing – self-employment	Evidence gathering for industrial incidents for preventing loss, destruction or contamination
Preparation owner–builder permit (re-accreditation)	Ontological coaching
Evaluating and planning installation of solar and heat pump water systems	Vocational education systems (RTOs)
Textile, clothing and footwear	**Mining**
Styling (fashion, image and media)	Workplace inspection (mining, explosives, petroleum and gas)
Fashion design	Generic induction to coal mining (core) re-accreditation
	Generic induction to coal mining (underground elective) re-accreditation
Chemical hydrocarbons and oil refining	
Management of safety and environmental practices	
Personal services, beauty, fitness and sport	**Road, aviation, and marine**
Metaphysical practices (tarot)	Transport of dangerous goods by road
Health science (aesthetics)	Driver competency
Safety and clinical applications using intense pulsated light	Traffic control signage installations
Fitness for work	Preparation for airline transport licence (airline transport pilot and aeroplane or helicopter)
Yoga teaching	4wd defensive driving
Golf management	Traffic control (signage, planning, drafting, risk management and auditing)
Tarot reading	Traffic control
Yoga education	Indigenous driver education
	Road incident investigation and reporting
	Road crash Investigation and analysis
	Police driver training
	Marine investigation

What does this mean for VET?

Accredited courses are meant to fill gaps and to address emerging issues. When we look at the nature of accredited courses, it seems that in some areas they are attempting to do this. Nevertheless, there continues to be a place for registration and course accrediting bodies in helping to maintain the integrity of the national system by accrediting those courses that fill a genuine gap and which cannot be filled immediately by existing units of competency. There must also be acknowledgement of the importance of accredited courses for customising training to the needs of different locations. It should also be made easier for competency units in accredited courses to be imported into the training packages themselves.

Skill sets and new units of competency

We also conducted systematic content analyses of training packages across all industry sectors to get a feel for how units of competency themselves address changing skill demands. This will help us to obtain concrete examples of training package responsiveness to changing demands. For this purpose, we are interested in examining skill sets and what have been called 'new' units of competency in current training packages.

Skill sets

Skill sets are defined in various ways in different training packages, but these definitions generally convey a similar message. Most training packages define skill sets as 'single units of competency, or combinations of units of competency from an endorsed training package, which link to a licence or regulatory requirement or defined industry need'. There continues to be an industrial relations debate among some industry sectors about whether skill sets are appropriate for entry-level training, especially for trades. However, there seem to be no issues about using skill sets for upskilling. The main concern with skill sets for entry-level training is that they are perceived to promote a fragmentary approach to skill development and may reduce the portability of recognised skills.

We identify these units and classify them into key themes. In early September 2009 we located 178[3] skill sets across endorsed training packages on the National Training Information System (NTIS) website: <http://www.ntis.gov.au>. By early August 2010 the number of skill sets had increased to a total of 323 across endorsed training packages on the website (table 10). Three-quarters of all the identified skill sets are located across nine training packages (Electro-Technology, Transport and Logistics, Property Services, Racing, Business Services, Aviation, Telecommunications Integrated Framework, Public Sector and the Transmission, Distribution & Rail Sector training packages). The first four of these training packages account for just 41.8% of the skill sets identified.

It must also be noted that at the time of data collection skill sets had not been identified in some training packages, either because they are still to be developed, or because they had not yet been endorsed. A list of each of the units that comprise skill sets in table 10 is provided in appendix E of the support document.

[3] At the time this included a skill set for water sustainability for which we could not find any further information.

Table 10 Number and percentage of skill sets by training package

Training package	No. of skill sets	Proportion of all skill sets represented
UEE0740 Electro-technology Training Package	40	12.4
TL107 Transport and Logistics	36	11.1
CPP07 Property Services	34	10.5
RGR08 Racing	25	7.7
BSB07 Business Services	21	6.5
AVI08 Aviation	19	5.9
ICT10 Integrated Telecommunications	18	5.6
PSP04 Public Sector	18	5.6
UET09ESI Transmission, Distribution & Rail Sector	17	5.3
PM08 Chemical Hydrocarbons and Refining	12	3.7
HLT07 Health	12	3.7
PUA00 Public Safety	11	3.4
FP105 Forestry & Forest Products	10	3.1
CUF07 Screen and Media	8	2.5
RII09 Resources and Infrastructure	7	2.2
ICT02 Telecommunications	5	1.5
MSA07 Manufacturing	5	1.5
SIT07 Hospitality Tourism Events	5	1.5
TAE10 Training & Education	4	1.2
CPC08 Construction and Plumbing Integrated Framework	3	0.9
LGA04 Local Government	3	0.9
TAA04 Training and Assessment	3	0.9
CU03 Entertainment	1	0.3
FNS04 Financial Services	2	0.6
MTM 07 Australian Meat Industry	1	0.3
CUS01 Music	1	0.3
SIF08 Funeral Services	1	0.3
CUV03 Visual Arts, Craft and Design	1	0.3
Total	**323**	**100.0**

Source: Derived from the various training packages identifying skill sets on the National Training Information System website at the time of writing.

We are also interested in understanding the types of competencies addressed by these skill sets. To do this we look at the titles of each of the competency units that make up the skill sets[4] (see table 11). We find that almost all are concerned with developing technical expertise or knowledge about a relevant practice or role (for example, shot firers in the mining industry, attendants and officials in the racing industry, combat fitness leaders in the defence industry, supervisory crew in the aviation industry, incident response commanders in the chemical and hydrocarbons and refining industry, to name but a few). This is not surprising as this is the intention of the skill set. The next most popular usage is the development of supervisory and leadership skills, followed by planning and organisational skills and computer skills. In order of frequency, other skills covered are those required for improving interpersonal skills, knowledge of regulatory requirements, emergency response skills, business and financial management, safe work practices, public relations and customer service skills, and training and assessment. It is interesting to note that skills for some industries—for example, the allied health sector—have been developed to enable health professionals with existing qualifications to gain

[4] To make this exercise more manageable, we take the 178 skill sets identified in training packages on the NTIS website in early September 2009. We exclude enterprise training packages.

additional units to complement them. This allows the health professionals to expand the types of services they can either provide or with which they can assist.

Table 11 Areas of skill and knowledge addressed by skill sets examined in content analysis

Skill or knowledge sought to be developed	No. of identified skill sets dealing with skill or knowledge	% of total skill sets (n = 178)	% of all cases
Technical expertise or knowledge about relevant work, relevant practice or role	177	99.4	33.9
Working safely and observing OHS procedures (including client welfare) and knowledge of environmental sustainability	65	36.5	12.5
Knowledge, awareness and observance of regulations, codes, licenses, and other rules	60	33.7	11.5
Planning, organisational and evaluation skills (including auditing, risk management, and documentation, and quality assurance skills)	53	29.8	10.2
Supervision and leadership skills (including time management)	42	23.6	8.0
Technological facility (including information technology and computing)	39	21.9	7.5
Interpersonal skills (including good teamwork, priority setting and conflict resolution)	25	14.0	4.8
Skills for responding in an emergency situation	24	13.5	4.6
Commercial business and financial management	19	10.7	3.6
Public relations, networking and customer service skills	16	9.0	3.1
Training and assessment skills	2	1.1	0.4
	522		100.0

Note: For two identified skill sets (water sustainability and animal welfare officer) it was difficult to find the various components of the skill set so these were not included.

New units of competency

Information on new units of competency can also help us to answer the question of how VET keeps up with changing skill demands.

> Training package developers must ensure that summary mapping information is provided in the training package showing relationships between new, revised or replaced units and their predecessors. (DEEWR 2007)

This information includes mapping requirements—both new and replacement ones—with the requirements of the predecessor. New units are those that are introduced into the training package. For this exercise and for ease of analysis, we do not treat as new units those units that have been imported from other training packages.[5]

In October 2009 we analysed this summary mapping information (where it was available) from training packages. When we look at these units of competency identified as new units (see table 12), we find that Business Services BSB07 and Plastics Rubber and Cable-making PMB07 together account for about a third of all new units. The new units in the Property Services Training Package (CPP07) are about sustainability, GIS (geographic information systems), complex spatial databases, security procedures, critical infrastructure protection, x-ray imaging procedures, metal-detection

[5] We use the summary mapping information (where it is available) to identify new units. When a new unit of competency is added, the mapping must indicate that it is a new unit. It must also note whether the new unit is made up of one or more existing units and whether outcomes are equivalent or not equivalent. Sometimes a unit may be new to the training package but in reality it has been imported from another training package. This mapping is called summary mapping in many training packages.

procedures and explosive trace-detection procedures. The new units in the Business Services Package relate mostly to business continuity procedures, international education, innovation, and intellectual property. New units in the Automotive Manufacturing Training Package are about improving efficiency and productivity, leadership, quality, and calibrating and testing equipment. Along with the information from our analysis of skill sets, this analysis of new units provides us with more evidence of the work being done to ensure that training packages respond to changes in the industrial, technological and social environments.

Table 12 Number of new units in selected training packages

Training package	No. of new units	%
BSB07 Business Services	137	20.6
PMB07 Plastics Rubber and Cable Making	79	11.9
MEA07 Aeroskills	57	8.6
CPP07 Spatial Information	55	8.3
CPC08 Plumbing Construction and Integrated Framework	52	7.8
CPP07 Access, Property Management, Property Development and Sales	46	6.9
AVI08 Aviation	39	5.9
PML04 Laboratory Operations	40	6.0
ICT02 Telecommunications	37	5.6
FDF03 Food Processing	31	4.7
PMA08 Chemicals Hydrocarbons and Refining	22	3.3
AUM08 Automotive Manufacturing	18	2.7
WRB04 Beauty	18	2.7
FNS04 Financial Services	13	2.0
CPP07 Security	9	1.4
ICA05 Information and Communication	6	0.9
SIF08 Funeral Services	5	0.8
	664	100.0

Source: Training packages with summary mapping available on the National Training Information Service website at time of analysis.

When we take a closer look at these new competencies we find that they cover a range of areas, including those addressing some of the new areas identified by industry skills councils as well as in enterprise consultation. A sample of the titles of new units identified in the Automotive Manufacturing (AUM08), Property Services (CPP07) and Business Services training packages is given in table 13.

Table 13 New units identified in most recent versions of training packages

Unit code	Title of new competency unit
	AUM08 Automotive Manufacturing
AUM1001A	Manage personal career goals
AUM1002A	Select and use tools and equipment in an automotive manufacturing environment
AUM5001A	Coordinate project activities
	Establish a test/trial for components of plant, tooling equipment or systems
AUM3020A	Influence and lead work groups in an automotive manufacturing environment
AUM3021	Sustain quality standards
AUM3021A	Reduce cycle time in work processes
AUM3023A	Reduce waste in work processes
AUM3023A	Undertake preliminary fault finding and machine reset
AUM3025A	Apply visual factory principles and practices to an automotive manufacturing environment
AUM4001A	Analyse a vehicle for research purposes
AUM4002A	Provide technical advice
AUM4004A	Use measuring equipment
AUM4006A	Calibrate measuring equipment in automotive development
AUM4007A	Test plant, tooling, equipment in automotive development
AUM8013a	Participate in improving workplace productivity
	CPP07 Property Services Training Package
CPPACC5019A	Coordinate the development and implementation of Disability Discrimination Act Action Plans
CPPCMN3001A	Participate in environmentally sustainable work practices
CPPCMN3002A	Develop a traffic management plan
CPPCMN4001	Develop workplace policy and procedures for sustainability
CPPSIS4015A	Apply GIS to problem-solving techniques
CPPSIS5007A	Maintain complex spatial data systems
CPPSEC1001A	Identify and report security risk situations
COOSEC1002A	Apply retail security procedures
CPPSEC1003A	Apply security procedure for the responsible service of alcohol
CPPSEC1004A	Apply health care security procedures
CPPSEC1005A	Apply critical infrastructure protection procedures
CPPSEC1006A	Apply x-ray image interpretation procedures
CPPSEC1007A	Apply walk-through metal-detection procedures
CPPSEC1008A	Apply hand-held metal-detection procedures
CPPSEC1009A	Apply explosive trace detection (ETD) procedures
	BSB07 Business Services
BSBADM411A	Produce complex texts from audio transcription
BSBCC0201A	Action customer contact
BSBCC0501A	Develop business continuity strategies
BSBCC0N401A	Work effectively in a business continuity context
BSBDIV601A	Develop cross-cultural communication and negotiation strategies
BSBDE602A	Research global trends
BSBEDU301A	Assist with monitoring compliance in international education
BSBEDU502A	Manage international education incidents and issues
BSBEDU503A	Manage international student recruitment and selection
BSBINN501A	Establish systems that support innovation
BSBINN502A	Build and sustain an innovative work environment
BSBINN801A	Lead innovative thinking and practice
BSBIPR301A	Comply with organisational requirements for protection and use of intellectual property
BSBIPR401A	Use and respect copyright
BSBIPR402A	Protect and use new inventions and innovations
BSPIBR403A	Protect and use brands and business identity

What does this mean for VET?

It is clear that skill sets provide an alternative method for addressing areas which have as yet to be covered and those which may be perceived not to require a fully fledged broad-based qualification. Skill sets are also useful for upgrading skills or providing access to supervisory or management training. However, there is some frustration among industry skills councils about the inability to have participation in skill sets recorded in national statistics. This lack of recognition is felt to decrease their status, especially when it comes to training completion data. Nevertheless, we note that in most cases the completion of the different units of competency that make up a skill set can be used for credit transfer to formal qualifications.

Do skill sets and new units of competency allow the VET sector to keep up with changing demands? If we look at the training packages that account for almost a third of all new units, we find that these actually deal with emerging issues and with advances in technology. For example, the Property Services Training Package (CPP07) has introduced units dealing with sustainability, geographic information systems, complex spatial databases, security procedures, critical infrastructure protection, x-ray imaging procedures, metal-detection procedures and explosive trace-detection procedures. The units in the Business Services Training Package (BSB 07) relate mostly to business continuity procedures, international education, innovation, and intellectual property. Those in the Automotive and Manufacturing Training Package (AUM08) are concerned with improving efficiency and productivity, leadership, quality and calibrating and testing equipment. These are all issues that have been identified both by industry skills councils and enterprises as comprising many of the key changes that have been experienced over the last 20 years or so.

A content analysis of units of competency in key areas of interest

In this section we examine in closer detail the changes that have been implemented in training packages to address concomitant changes in workplace practice. We examine units of competency in occupational health and safety, information technology and book-keeping, as key areas of interest. We select these as they are topics that reflect some of the general changes we have been told have affected businesses in the last 20 years.

Occupational health and safety units

Over the last two decades across all industry sectors, the need to keep everyone safe at work has been a key driver of changed workplace procedures and practice. This need to ensure that workers and their supervisors are adequately prepared to operate safely in the interests of their own health and welfare, as well as that of others, is taken up in all training packages. In some training packages, especially those dealing with physically dangerous activities or hazardous materials or substances, there are multiple units of competency that address occupational health and safety (see table 14).

In late 2009 we undertook a content analysis of 64 units of competency that dealt with occupational health and safety. These have been downloaded from current (at the time of analysis) training packages we were able to access from the National Training Information System website. Superseded training packages have not been included and nor have enterprise training packages (which we found generally difficult to access on the site). The units deal with competencies designed to prepare individuals to follow occupational health and safety procedures and regulations. They also deal with the competencies required by those responsible for developing, supervising or managing the implementation of OHS systems (including risk management) and procedures. Although the competencies required will vary, all workers at whatever level are required to ensure that they implement safe work practices to prevent injury to self and others. It would be a mammoth task to undertake a content analysis of every unit of competency in every endorsed training package. In table 13 we provide a list of the training packages we have examined and the number of OHS units in each of the training packages we looked at in detail. For example, we identified five OHS units of competency in the Hospitality, Tourism and Events Training Package but we have just closely examined three of the five units dealing with this topic. Similarly, the Resources and Infrastructure Training Package has 13 OHS units but we have looked at just two of the 13 competencies dealing with this topic. The Business Services Training Package has 34 OHS units of competency but we have examined just two of these. We must also keep in mind that the Business Services Training Package covers qualifications specifically aimed at occupational health and safety occupations.

Table 14 Number of units of competency dealing with OHS examined for the training packages in the content analysis

Training package	No. of identified competency units dealing with safety	No. of units in content analysis
Aviation	14	14
Automotive Industry: Retail, Service and Repair	1	1
Automotive Manufacturing	1	1
Agri-food	1	1
Correctional Services	3	3
Construction Plumbing and Integrated Services	1	1
Entertainment	1	1
Screen and Media	1	1
Music	1	1
Food Processing	6	6
Financial Services	1	1
Forest and Forest Products	1	1
Information and Communications	1	1
Furnishing	3	3
Textiles, Clothing and Footwear	2	2
Aeroskills	1	1
Manufacturing	4	4
Manufactured Mineral Products	1	1
Printing and Graphic Arts	1	1
Telecommunications	1	1
Public Safety	1	1
Hospitality Tourism and Events	5	3
Hairdressing	1	1
Resources and Infrastructure Industry	13	2
Retail Services	2	2
Chemical Hydrocarbons and Refining	1	1
Maritime	1	1
Transport and Logistics	1	1
Transmission, Distribution and Rail Sector	2	1
Electricity Supply Industry – Generation Sector	1	1
Sugar Milling	2	1
Training and Assessment	1	1
Business Services	34	2

In table 15 we list units of competency from a sample of the training packages examined to provide information on the types of competencies that are covered. It shows that different industry sectors have specific occupational needs that require a separate unit of competency to ensure that particular issues are covered in depth.

Table 15 OHS units in selected training packages

Coverage
Aviation (14 units, all examined)
1 Implementing regulations and policies during aircraft safety and service operations
2 Monitor the transfer of hazardous materials
3 Undertake aircraft underwater escape and survival
4 Utilise emergency breathing system
5 Implementing regulations and policies during check-in procedures
6 Apply relevant laws and regulations to the management of an aerodrome
7 Marshal aircraft
8 Supervise the safety of aerodrome works and general access
9 Maintain the safety of people and aircraft
10 Respond to abnormal and emergency situations within the aircraft
11 Manage human factors in aircraft flight
12 Supervise cabin safety and security
13 Provide SAR alerting and emergency advice
14 Manage human performance and team resources during air traffic control
Food processing (six OHS units, all examined)
1 Follow work procedures to maintain food safety
2 Monitor the implementation of occupational health and safety policies and procedures
3 Implement occupational health and safety systems and procedures
4 Follow work procedures to maintain health and safety
5 Implement the food safety program and procedures
6 Identify, evaluate and control food safety hazards
Furnishing (three OHS units, all examined)
1 Follow safe working policies and practices
2 Establish and maintain a safe furniture making work environment
3 Determine occupational health and safety implications of designs
Resources and Infrastructure Industry (13 OHS units of competency, two examined)
1 Work safely and follow OHS policies and procedures
2 Enter and work in confined spaces

What the OHS units of competency say

A content analysis of the 63 units of competency indicates that, in most cases and especially in industries that are heavily regulated or deal with high safety and health risks to workers and to others, the units of competency are very comprehensive in the treatment of the information and practices required to operate safely and maintain a safe environment. This level of treatment is laudable and shows that on paper this issue is well covered. Hazards in the workplace are articulated in every unit of competency examined. The competency units provide in-depth descriptions of hazards that may be encountered to ensure that safety can be assured. These apply to workers at all levels of the operation. One unit of competency also had the competencies required of those entrusted with maintaining organisation-wide procedures, including chief executive officers. Although it is clear that the level of detail used varies according to the zeal of training package developers, it also varies according to the risks associated with particular hazards. An example of all the various hazards associated with some specific industries or industry roles are documented in appendix G of the support document.

Across the units of competency examined, there is direct reference to the need to comply with federal and/or state and territory legislation. In the rare units where this is not specifically spelled out, the term 'OHS policies and procedures' is used. In those industries which have a high level of international traffic, there is also reference to the appropriate international legislation and

regulations that must be adhered to. The need to comply with material safety data sheets (MSDAs), organisational safety plans, programs, practices and procedures is also frequently invoked.

For those occupations which require extensive use of personal protective clothing and equipment (PPEs), explicit details are provided. In units of competency aimed at workers who operate in areas where they risk personal injuries or injuries to others, there are specific references to the safe operation of the safety equipment and apparatus required, including that it is kept in good working order and stored safely. Although the types of personal protective clothing and equipment will sometimes overlap across sectors, there are specific sets of clothing that apply to different sectors and roles. We provide a list of these protective items along with identified hazards for a small sample of three training packages in table 16. A more complete list for some industry sectors appears in appendix G of the support document.

Table 16 Example of PPEs and hazards by selected training packages

Training package area	Example of personal protective equipment	Examples of hazards identified
Manufacturing	Hard hats, goggles, glasses, face shields, hearing protection (ear muffs and plugs), dust masks, canister masks, SCBA long-range breathing, gloves, gauntlets, safety boots, anti-static equipment, overalls, aprons and jackets/pants.	Handling chemicals and hazardous materials, chemical spills, gases, liquids under pressure, moving machinery and equipment, hazardous materials, working at heights, in restricted or confined spaces, or environments subject to heat noise, dust, vapours, fire and explosion, bomb scares, incidents with a potential for serious injury
Aviation	High-visibility vests, overalls, earmuffs, eye goggles, protective overalls, protective boots, respiratory protection, signalling devices, head protection	Bomb scares, fires and explosions, fuel or chemical spills, violent incidents, gases and liquid under pressure, moving machinery, working at heights and confined spaces, fuel, ammunition and sewerage.
Hospitality, Tourism and Events	Use of personal protective clothing and equipment	Bomb threats, irrational customers, accidents, robberies or hold-ups, fires, floods, earthquakes, power failure, contamination, body fluids, spitting, sneezing, coughing, blowing nose, smoking, eating over foods or food preparation surfaces, contaminated food, vermin, air-borne dust, linen, tea towels that may be contaminated with human waste such as blood and body secretions, dirty equipment and materials and utensils, contaminated garbage, colleagues without appropriate training or understanding of good hygiene practices, policies and procedures, equipment not working correctly such as fridge and temperature probes, working space, lighting, hot and cold environments, climate, weather or exposure such as insufficient shade and protection from rain, sun or wind, exposure to flood, fire and storm, prevailing noise levels, electrical items, flooring, equipment designed to assist or replace manual handling, pests, crowds, wild animals and local wildlife, customers' abilities to fully engage in all activities, hazards associated with activities to be undertaken, plant (machinery, tools, appliances, equipment) working practices (opening and closing procedures, security procedures), and theft and robbery.

Note: SCBA =self-contained breathing apparatus.

Another frequently appearing OHS competency relates to the need to keep appropriate records, reports, and documentation. In some industries, registers of events and corrective action taken are maintained. These formal reporting (often in writing) competencies do not always apply to operators at lower levels, who are asked to report any hazards to appropriate or designated personnel.

OHS units of competency often address the need to comply with organisational or standardised emergency procedures. Once again the level of detail used will vary with those industries that are heavily regulated or where the risks of danger to safety and health are greater.

Terms such as 'duty of care' or its equivalent are also used across industry sectors. Sometimes they relate to 'duty of care' legislation itself. In other instances, the term is used in a more generic way to refer to responsibilities for worker safety.

Competencies related to risk management, risk identification and the application of corrective action appear regularly. These apply to those who are charged with formal risk management processes at company-wide level; they also apply to everyday actions, to ensure that all workers are vigilant about risks to personal safety and health.

The OHS units of competency also speak about the need to be sensitive to the needs of people from different cultural backgrounds. There is an acknowledgment of the different levels of language and literacy required to apply the competencies, generally in sections that relate to skills and knowledge required. Not surprisingly, there is reference to good 'housekeeping' or 'layout' of work spaces so that work can be undertaken in efficient and safe spaces.

Competencies dealing with the maintenance of physical safety through the use of appropriate signage and barriers are also included. These relate to identifying, establishing, storing or maintaining safety signage or guards, especially in those industries where there is a significant risk of physical danger and a risk to individuals and co-workers, particularly in manufacturing environments, mines, and aerodromes and aircraft. Correct manual handling and lifting are especially required for those involved in the health care sector and also for those involved in the physical transporting or storing of equipment and materials. Correct posture is highlighted for those in more sedentary occupations or in the service sectors.

Units of competency also refer to the need to dispose of, recycle and re-use materials in environmentally friendly ways. An understanding of the legal rights of employers and workers is also included.

In table 17 we provide a list of the issues that receive the most frequent attention in the 64 units of competency examined.

Other safety and health issues

A range of other issues was also identified. These were far less frequently observed than those we have just discussed. These included the need for workers to:

- ✧ understand their roles in participating in organisational arrangements for controlling OHS, specific procedures for dealing with: the contamination caused by specific types of materials; food; bodily fluids or wastes; and personal hygiene (especially in food processing areas)
- ✧ take responsibility for asking for assistance in dealing with any issues, and for managers to consult with or seek advice from experts and specialists for the development and implementation of specific OHS plans and processes
- ✧ use equipment and materials in the way specified in manufacturers' instructions
- ✧ exercise the appropriate personal control and leadership required for those in leadership positions, or in key roles for dealing with emergency situations
- ✧ provide support and care for other staff and customers during an emergency. (This is specifically referred to in a small number of cases, but the type of language used across the units of competency implies that this is considered to be a general responsibility.)

In a small number of units there is reference to the provision or application of first-aid itself, and for ensuring that certain tasks are only undertaken by those with required permits or licenses (especially the case for mining, and transport and logistics).

The need for controls for smoking, alcohol and drug abuse and fatigue management is also mentioned. For example, the term 'fit for duty' is used in the resources and infrastructure industry

to ensure that those who front up for work will not cause injuries to themselves and to others working with them.

Table 17 Most frequently identified issues in OHS units of competency in training packages examined

Issues identified in content analysis	% of units addressing such issues
State and territory, federal or international legislation, regulations and legal obligations	98.4
Hazards and hazardous situations	98.4
Protective personal equipment and clothing	82.8
Material safety data sheets/job safety analysis, safety plans or programs, safety, policies and workplace procedures	68.8
Recording, reporting and documentation of OHS issues and events (including developing systems for these)	67.2
Following or developing required emergency procedures	64.1
Reporting of incidents or potential incidents to appropriate designated person and others	57.8
Addressing duty of care requirements	57.8
Identifying risks and applying corrective action (including development of appropriate risk management and control processes)	51.6
Addressing issues of cultural differences, barriers, and diversity, including individuals with specific needs	42.2
Understanding signage, safety guards and warning signals (including developing systems for establishing these)	40.6
Maintaining or developing suitable layout of plant or establishment and keeping work spaces clean and tidy	40.6
Maintaining and following processes for ergonomic safety	35.9
Following procedures for environmental safety and care (including storing and disposing of hazardous substances and clean areas)	29.7

Method and context of assessment suggested for OHS units

In the main, training packages refer to the need to assess the competencies in question via a varied range of techniques and, wherever possible, in the workplace or in realistic simulations of workplaces, as well as through the use of simulators. There is often reference to third-party reports. Techniques often include: observation, simulation, case studies, interviews, written tests, and workplace projects and portfolios. In many instances there is a caveat attached to simulations, and these generally refer to the need for the simulation to accurately reflect workplace environments and contingencies. There is also reference made in some training packages to the need for the assessor to have recognised expertise in the area they are assessing. In table 18 we provide verbatim examples from a small sample of training packages of how training methods are identified.

Information technology units for business

Advances in information technology are reported to have automated many work practices which were previously undertaken manually. If we examine the Business Services Training Package (BSB07), we can identify the various units that apply to these types of developments. From the outset we can see that the Business Services Training Package aims to address skills that are common to all businesses, through its own BSB07 units of competency as well as those it imports from other training packages (see tables 19 and 20). For this reason, we have units of competency that address a range of business administration contexts.

BSB07 has competency units dealing with basic IT skills, ranging from developing operating personal computers, developing keyboard skills, creating and using spreadsheets, monitoring and maintaining records in online environments, producing complex desktop published documents, to managing knowledge and information. Such technology needs to be maintained, and upgraded.

BSB07 also has units dealing with using and maintaining business technology, implementing advanced electronic technologies, establishing and maintaining a workgroup computer network, configuring and optimising customer contact technology. It has imported units from other packages which also deal with computerised environments (for example, computerised accounting, web browsers and email, recovery, quality assurance, email, computer packages and so on).

Table 18 Examples of methods of assessment to be used in selected training packages

Training package	Unit of competency	Assessment method and context as described in training package
Transport and Logistics	Follow OH&S procedures	Performance is demonstrated consistently over a period of time and in a suitable range of contexts. Resources include a range of relevant exercises, case studies and other simulated practical and knowledge assessment, and/or access to an appropriate range of relevant operational situations in the workplace. Assessment of this unit must be undertaken by a registered training organisation. As a minimum, assessment must be conducted through appropriate written/oral tests. Practical assessment must occur through appropriately simulated activities at the RTO, and/or in an appropriate range of situations in the workplace.
Hospitality, Tourism, and Events	Identify hazards and assess and control safety risks	A range of assessment methods should be used to assess the practical skills and knowledge required to identify hazards, and assess and control safety risks including: direct observation, consulting with appropriate colleagues about hazard identification, and risk assessment and control, direct observation of the candidate conducting a hazard identification and risk assessment process, evaluation of hazard identification and risk assessment reports prepared by the candidate detailing how safety issues were addressed for a given project or work activity, evaluation of projects conducted by the candidate to address safety issues in a given workplace; case studies and problem-solving exercises to assess safety responses to different workplace hazards; written and oral questioning or interview to test knowledge of legislation and requirements relating to hazard identification and risk assessment; review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate. Holistic assessments with other units relevant to the industry sector, workplace and job roles are recommended, for example, SITXOHS004A Implement and monitor workplace health, safety and security practices. Employability skills embedded in this unit should be assessed holistically with other relevant units that make up the skill set or qualification and in the context of the job role.
Construction, Plumbing and Services Integrated Framework	Apply OHS requirements, policies and procedures in the construction industry	Assessment methods must satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package; include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application; reinforce the integration of employability skills with workplace tasks and job roles, confirm that the competency is verified and able to be transferred to other circumstances and environments. Validity and sufficiency requires that: competency will need to be demonstrated over a period of time reflecting scope of the roles and the practical requirements of the workplace; where the assessment is part of a structured learning experience, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge; all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should take in as far as practicable the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Table 19 Business Services Training Package (BSB07)

Area of coverage	No. of units
Occupational health and safety	34
Marketing	32
Aboriginal and Torres Strait Islander agencies	30
Project management	27
Legal services	25
Information technology	21
Customer contact	20
International education	19
Record-keeping	19
Workplace relations	19
Small business	17
General administration	16
Advertising	16
Design practice	15
Learning and development	15
Human resource management	14
Business management	14
Workplace practice	12
Compliance management	11
Financial administrative activities and management thereof	11
International trade	11
Franchising	10
Information management	8
Intellectual property	8
Purchasing	8
Critical and creative thinking	7
Public relations	7
Sales	7
Customer service	6
Frontline management	6
Innovative ideas and practices	6
Medical practice administration	6
Business relationships	6
Communication (including maintaining workplace safety)	5
Research	5
Quality audit	4
Employment management services	4
Working effectively (various environments)	4
Business continuity	3
Diversity and cross-cultural issues	3
E-business solutions and processes (including website maintenance and review)	3
Governance	3
Sustainability	3
Writing skills	3
Product knowledge	2
Risk management	2
Total	**527**

As already noted, BSB07 has units of competency imported from other training packages (table 20). These too include skills that apply to information technology.

Table 20 Imported units for Business Services Training Package (BSB07)

Originating training package	No of units
Public sector (values, conflict management, quotations, compliance with legislation, procurement, offers, contracts)	18
Community services (duty of care, referrals, client services, relationship building, research)	8
Financial services (computerised accounting, budgeting, customer service, records, coaching and mentoring, selling)	7
Information and communications technology (web browsers and email, recovery, quality assurance, email, computer packages)	5
Screen and media ((writing, editing)	4
Health (first-aid)	3
Training and assessment (needs analysis)	2
Tourism and hospitality (sales activities, rostering staff)	2
Conservation and land management (managing cultural processes in indigenous organisations)	1

Source: BSB07 Business Services Training Package.

General book-keeping units

Through a content analysis of a sample of units of competency in the Financial Services Training Package (FNS04) that relate to general book-keeping, we have also tried to capture how information technology has changed the landscape of business service functions. These include: establishing and maintaining a payroll system; carrying out business activities and instalment activity statement tasks; establishing and maintaining an accrual accounting system; and establishing and maintaining a cash accounting system. These units reflect the need for book-keepers to develop the skills and knowledge to help them to keep abreast of relevant legislation, schedules and processes for regulated activities (including business activity statements, GST, payroll tax, PAYG, medicare, superannuation and awards). They also refer to knowledge about relevant codes of practice. The units refer to both manual and computerised operations, which reflect the reality that, although the great majority of businesses operate a computerised office, there are still some that maintain manual practices for some operations. This information also accords with what we have been told in enterprise consultations.

What does this mean for VET?

We undertook this exercise to gauge whether major changes identified by enterprises and industry skills councils are reflected in the units of competency designed to address these changing skill demands. One major change which has affected all industries has been regulatory in nature and concerns requirements to ensure the occupational health and safety of individuals, our reason for choosing it as a major example of what is expected. It is also meaningful to look at occupational health and safety because each training package addresses it for their particular sectors.

We have found that the units of competency examined provide quite detailed and comprehensive advice on what is required of workers in industry, including the various factors that must be addressed, to ensure that workers, their managers and colleagues are able to adopt safe work practices and consequently have a safe work environment. There is also a large array of competency units applying to the different facets of OHS. One training package contains 34 different units of competency relating to OHS in the workplace. This is the Business Services Training Package, which has also within its scope qualifications in occupational health and safety, presumably to provide credentials for OHS managers, where there is a need to have a separate role for this activity.

Similarly, units of competency for book-keeping highlight the skills required for work in offices and on tasks that have become increasingly computerised. Book-keeping units also highlight how business systems for monitoring finances and records are driven by legislation.

The units of competency themselves provide essential advice for trainers and assessors. Trainers can use them to inform the types of resources developed to help students acquire the required understandings and competencies. In those cases where the training package is very explicit about what is required, they can be used by assessors to identify the types of evidence needed before they make their own assessments. Employers can use them to develop the policies and strategies required to maintain safe work practices and mitigate risk within their organisations. Recruiters can use them for developing job descriptions.

The requirement for industry sectors to address occupational health and safety competencies results from legislation relating to issues of workplace safety. We have found that in the main the units of competency make reference to the various regulatory requirements by naming actual legislation, standards, and codes of practice, or by referring users to where this information is available. Our content analysis of the units of competency dedicated to OHS has shown that, across industry sectors, there has been specific attention paid to: descriptions of hazards; personal protective equipment; the actions required to prevent or control hazards; and instructions for wearing, applying, caring for and storing equipment in the way prescribed. OHS units, because they deal with legislated requirements, may have special needs which require them to be more specific than other units. However the units of competency are displayed, there must be sufficient contextualisation to be of use to practitioners, assessors and auditors.

In general, units of competency have associated resources to support them, although these resources are not always freely available to users. Where there is a cost, the ability of practitioners to use them for preparing for training and assessment is affected.

Some sectors of the VET training system claim that units of competency in training packages and accredited courses are not to be considered in the same way as curriculum. This may be so at a very theoretical level, but we have found that in many cases the documentation is so explicit that it has the potential to provide the basis of very good learning plans and assessments. Assessment methodology is also covered in each of the units; however, there is rarely a mandatory specification on how the assessment will be conducted. In around three-quarters of the training packages there are specific references to the assessment of competencies either in the workplace or in realistic simulations of work conditions. Some of the training packages discuss assessing knowledge through written assessments, but generally evidence of underpinning knowledge and understanding is also covered through a variety of other mechanisms, including observation, case studies, interviews, projects, portfolios and the like. There is frequent reference to questioning candidates during the performance of a practical test to confirm underpinning knowledge. This flexibility of modes enables practitioners to apply professional judgment in the way they go about assessment. This is especially advantageous if the practitioner has the assessment skills and knowledge required to make valid and reliable judgments. Issues arise if practitioners have had insufficient assessment experience or training. This is why it is important to increase the rigour of the qualifications or the units of competency that prepare VET practitioners for undertaking these assessment responsibilities.

The template used gives training package developers a systematic schema for preparing units of competency. There may be a case for including exactly the types of practices that should be avoided when assessing or delivering training for competencies in potentially hazardous situations. For example, the rigour of the training and assessment associated with good simulations for learning how to work in confined spaces, at heights or on platforms is a common issue. One way to deal with such issues might be to identify acceptable and unacceptable practices.

Another issue relates to providing more specific information on the availability, nature and standard of the equipment and materials to be used in training and assessment. Although this

would increase the length of the unit of competency, it is important that trainers and assessors understand the implications of what is involved in rigorous training and assessment. Information on the types of practices/contexts that should be avoided (for example, lack of access to sufficient resources, including diagnostic equipment, utensils, machinery, and appliances) might help to avoid situations where students merely observe tasks being done, rather than doing the tasks themselves.

The units of competency do not always establish the level or standard of performance that must be attained, instead employing terms like 'according to organisational requirements' or their equivalents, to address benchmarks for performance. In this respect, they leave themselves open to the criticism of being too broad and not being useful for assessment purposes. This issue should be investigated.

Although there is frequent reference to third-party reports as evidence of competency, issues of validation and moderation are not taken into account. This is another area that may need closer investigation.

Findings from reviews and national surveys

In this chapter we discuss findings from a project completed in 2009 for the Joint Steering Committee of the National Quality Council (NQC) and the Council of Australian Governments (COAG) Skills and Workforce Development Sub-Group—VET products for the 21st Century. It comprised public and targeted consultations across all states and territories with registered training organisations, state training authorities, businesses, regulators, industry skills councils, state-based industry advisory groups, and the Australian Council of Trade Unions (ACTU).[6] We also refer to findings from a NCVER study published in late 2009 on the processes used by TAFE institutes to measure effectiveness and efficiency. Results from the national Student Outcomes Survey on satisfaction with training and the relevance of training to current employment are also discussed.

Findings from recent research

The 'VET Training Products for the 21st Century' review aimed to determine whether specific aspects of the system, including training packages, competency definitions, qualification frameworks and credit transfer arrangements, were flexible and able to respond to the current and future needs of industry. The review found general support for existing principles and systems. However, it also found that there was a desire for these systems to be streamlined to ensure that they continued to have relevance for the changing environment. It was important to acknowledge the fact that not all students had access to workplaces to be able to demonstrate that they had achieved competencies to the standards of the workplace. There were recommendations for streamlining training packages to make them less repetitive and cumbersome, and more user-friendly, and to reduce extraneous bureaucratic requirements associated with government endorsement. The rules for combining or packaging units of competency for qualifications have also been changed to enable more flexibility and to reduce duplication. Suggestions have been made for introducing a system of core competencies, and electives (including electives that can be imported from other training packages) to enable specialisation.

NCVER researchers have recently published a study that finds that TAFE institutes themselves are also involved in scanning their environments to understand changing skill demands (Misko & Halliday-Wynes 2009). Institutes commonly employ similar formal and informal mechanisms for gathering intelligence on what industry wants. Formal course advisory panels, industry forums and other industry engagement arrangements help them to keep up to date with workplace change, advances in technology and industry requirements. The employment of part-time instructors from industry also assists them to maintain relevance and currency. All institute directors and many senior managers sit on key state, regional or national committees and boards. Conversely, many influential industry leaders sit on TAFE boards and councils. These high-level forums are especially useful for gathering intelligence on emerging issues and for developing relationships with key employers. This is another indication of their focus on proactive planning activities to ensure they are able to respond to industry needs. Because providers largely deliver training package qualifications which have themselves been based on consultations with industry, providers are no longer acting in a vacuum in relation to industry needs. Nevertheless, they can use their own industry-engagement

[6] Consultants comprised researchers from NCVER, Ithaca Consulting, and Paul Byrne Consulting.

activities to maintain specific linkages with local industry and to customise delivery to different groups of clients (including apprentices and trainees, other students, existing workers) and different enterprises. Training packages and accredited courses steer this activity towards the delivery of nationally recognised training. That said, there is also a great deal of enterprise training that is delivered to suit specific enterprise needs, quite apart from national qualifications.

The majority of educational managers and many teaching staff (especially in the trades) are members of industry networks and associations. Through these networks, institutes aim to increase their understanding of commercial and industrial developments. This helps signal the emerging skill requirements and assists in identifying employers who need training for their workers.

Despite these broad industry-engagement practices, institutes claim that it is not always easy to understand what employers want. Substantial groups of employers do not participate in advisory, collaborative or information-sharing activities and their expectations often vary and can be contradictory. For example, some institutes have found that employers may want the majority of apprenticeship training to be undertaken in the workplace, while others want all the training to be conducted at TAFE. Although institutes say they do their best to adapt provision to meet individual needs, the question of 'who speaks for industry' continues to be an issue.

TAFE institutes collect extensive information about training needs in their local areas, but gaps remain. Institutes want ready access to accurate predictions of skill shortages and training demand. Forecasting skill shortages is not an easy task, no matter whose responsibility it is.

Institutes say they are poor at tracking what happens to students once they have completed courses and left the institution. There are two questions of interest to institutes: whether students are able to move into better jobs; and whether they progress to higher-level qualifications.[7] Keeping in touch with international students is also problematic.

Another set of problems faced by many TAFE institutes relates to the low levels of English language skills held by international students when they enrol in TAFE programs. Teachers report that, while agents responsible for promoting international programs are focused on attracting as many students as possible, the teachers themselves are concerned about the ability of these students to complete the training.

Findings from the Student Outcomes Survey

We can also gauge the system's ability to meet the needs of industry by finding out the extent to which training is relevant to employment. Since 2000, three-quarters of government-funded TAFE graduates who move into employment have consistently claimed that their training has been relevant to their job. This is also the case when we take into account all VET students, including those that are not from government-funded TAFE. Over the same period, almost nine in ten graduates report overall satisfaction with the quality of training.

What does this mean for VET?

These findings provide general support for the architecture of the system and for the continuation of the current framework; that is, training packages and accredited courses. However, they do point to the necessity of strengthening arrangements for the implementation of training and assessment. Training providers also need help so they can identify demand in their local areas more successfully, and keep track of student destinations.

[7] The Student Outcomes Survey, conducted by NCVER, provides this information to some extent and is used at a high level in strategic planning. Institutes want more institute-specific data to help them better evaluate course-specific outcomes.

Seventy-five per cent of students responding to the Student Outcomes Survey claim that, on the whole, they find their training relevant to their employment. There may be value in following up the other quarter who say that their training has not been relevant. In doing so, it will be necessary to gain more information on exactly what they mean when they say their training has not been relevant, especially as many non-VET graduates also end up in jobs in fields unrelated to their training. For example, many university graduates who have undertaken more general degrees may not find themselves in jobs that use their specific field of study. However, such general training may have provided a different preparation, one which may still be important to employment; for example, the development of analytical and critical skills. This may also apply to these TAFE graduates.

Conclusions

We conclude that current VET arrangements and structures for identifying changing skill demands across industry sectors are adequate. Having dedicated bodies (that is, industry skills councils) which identify the requirements flagged by industry and translate them into specific units of competency that are subsequently used to inform training and assessment plans and activities is sound practice and should be continued. This enables training providers to get on with the business of training and assessment.

Issues that are yet to be resolved concern the depth and detail observed in units of competency in some training packages. This detail may be more a reflection of the training package developer than of any mandatory requirements. Nevertheless, we are of the view that whether or not the system opts for a pared-down version of training packages and the units within them, there is value of having sufficient—but not excessive—description within the unit or supplementary information to enable consistency of outcome. There may also be some value in having units of competency which may be comprehensive and so are accompanied by a brief one-page overview.

Regardless of the system's ability to keep up to date with changing skill demands, the essence of successful and responsive VET arrangements may reside in the quality of the implementation. This includes factors such as the knowledge and skill of the trainers, their access to suitable up-to-date machinery, equipment and materials, and the validity and reliability of judgments about competence made by assessors.

Industry skills councils are prepared to take on board industry suggestions and to be proactive in formulating strategies to improve their productivity. The introduction across sectors of 'issues registers' and the development of specific tools for workforce development are other examples of how they have been proactive in adopting new strategies to ensure they receive constant feedback on their activities. These strategies should be strengthened and supported. However, there is only so much that industry skills councils can do to motivate employers to support training for their workers. In the long run, it is employers and their employees who will have the final say on whether they wish to engage in further formal training. It is also important that industry skills councils do not rely solely on online promotions and campaigns. Online services can mean that the message has the potential to get to a large number of people in a cost-efficient manner. However, some people may not be aware that such promotions exist. There is still a need for face-to-face and personal involvement at the enterprise level.

If the training of existing workers is to be one of the key features of workforce development, it is important to re-visit the way we treat language, literacy and numeracy (LLN) training in training packages. This would remove the marginalisation of these programs from the mainstream and give formal status to their importance in VET.

There are a two major ways we can address the quality of training and assessment. The first is to look at the quality of the outcomes being produced; the second is to ensure that the regulatory processes work in ways that are beneficial to the system. In view of the continuing requests from industry for more rigorous assessments to determine competency more adequately, we suggest a concerted effort to increase assessment verification processes.

Although there is reference in the Australian Quality Training Framework standards to the need for trainers and assessors to have 'vocational competence' in the area in which they are providing instruction or conducting assessments, there is rarely a description within the unit of competency itself of the skills, experience and abilities required of assessors. This may be an area worthy of further investigation. Also worthy of further investigation is the stringency of registration for those registered training organisations who want to include in their scope the delivery and assessment of the competencies required to acquire training and assessment (TAA) qualifications.

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[8] Now Department of Education, Employment and Workplace Relations.

Support document details

Additional information relating to this research is available in *Responding to* c*hanging skills demands: training packages—support document*. It can be accessed from NCVER's website <http://www.ncver.edu.au/publications/2292.html>. It contains the following information:

- ✧ Changes in workplace practices: an enterprise perspective
- ✧ Industry skills council case studies
- ✧ Industry skills council response to meeting environmental sustainability needs
- ✧ Nationally accredited courses by field of studies and field of education
- ✧ Skill sets by training packages
- ✧ Training packages and units of competencies in content analysis
- ✧ Description of personal protective equipment and hazards in the workplace.

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