

Workforce skills development and engagement in training through skill sets: literature review

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OCCASIONAL PAPER



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About the research

Workforce skills development and engagement in training through skill sets: literature review

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This literature review examines the available research on skill sets. It provides background for a larger research project *Workforce skills development and engagement in training through skill sets*, the report of which will be released early next year.

This paper outlines the origin of skill sets and explains the difference between skill sets developed by national vocational education and training (VET) industry bodies for training packages and those developed by registered training organisations (RTOs) for particular clients. The researchers consider the rationale for skill sets and explain their role in the national training system.

Key messages

The review identifies a number of perspectives on skill sets and their contribution to the VET system:

- Some research suggests that skill sets are a valuable VET solution because of their flexibility and capacity to be responsive to changing labour market needs.
- Skill sets may also provide a quick and more cost-effective option for learners and may appeal to those who might be daunted by the prospect of having to undertake a full qualification.
- Conversely, some suggest that skill sets may confine individuals to narrow job roles and reduce their labour mobility.

The larger project, which will draw on quantitative and qualitative TAFE NSW data on the uptake of skill sets in the Agrifoods sector, will test these assertions.

Tom Karmel
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Contents

Tables	6
Introduction	7
Skill sets: origins and types	9
Unitisation of VET	9
Skill sets	10
Subsequent training product reforms and skill sets	13
Summary: the two types of skill sets in Australian VET	13
Skill sets: rationale, benefits, issues and recommendations	15
Rationale for skill sets	15
Specific benefits and issues associated with skill sets	17
Summary of the various perspectives on skill sets	20
Skill sets: latest recommendations	20
Implications for the research study	22
References	26
NVETRE program funding	28

Tables

1	Key features of the two types of skill sets in Australian VET	14
2	Study findings on VET qualification completions rates	16
3	Skill sets: recommendations of Skills Australia	21
4	Chemical use skill sets compared and inclusion in an accredited course	23

Introduction

Skill sets defined as: 'single units or combinations of units which link to a licence or regulatory requirement, or defined industry need' (National Quality Council 2006) have emerged as an important component of a flexible and responsive vocational education and training (VET) system. Currently there is little quantitative research into the contribution that skill sets have made to workforce skills development.

This paper sets out to review the research available on skill sets and establishes the context for the project, *Workforce skills development and engagement in training through skill sets*, being conducted through the auspices of the National Centre for Vocational Education Research (NCVER).

The review discusses the origin of skill sets and the key features of the two types of available skill sets; that is, skill sets developed by industry skills councils in training packages, on the one hand, and skill sets developed by registered training organisations with their particular clients, on the other. Training package skill sets are made up of prescribed units of training package qualifications based around a licence or regulatory need. Skill sets developed in registered training organisations are flexible constructs comprised of a mixture of training package and/or other accredited units of competency or modules tailored to meet client needs.

This overview also provides the rationale for skill sets and here the lack of hard research evidence of the benefits of skill sets is revealed, especially the commonly held view that the acquisition of skill sets should not be at the expense of full-qualification training. The latest policy recommendations on skill sets by Skills Australia in *Skills for prosperity: a road map for vocational education and training* (2011, p.124) are carefully crafted and they include an emphasis on the need for data collection and assessment of the impact of skill sets delivery, including any unintended negative impacts on qualification completions. The call for an evidence base on skill sets was the trigger for the current study.

The research study aims to test claims about skill sets through a case study of the learning and work pathways of students who have participated in skill sets developed by TAFE NSW and the Agrifoods industry to support TAFE (technical and further education) institutes. Some of the students who have participated in full qualifications training in Agrifoods are also included in the case study. The implications of this literature review for the project are discussed in the final section of this document. The messages that have emerged include:

- Rigour will be required in the study to ensure there is a good understanding of the skill sets under investigation. How skill sets developed by TAFE NSW compare with training package skill sets must be considered, to determine whether the stronger focus on training package skill sets in current policies is justified. With recent changes in rules relating to the composition of qualifications in training packages, the potential for accredited course skill sets developed by registered training organisations to be built into training package qualifications has been brought into focus. Their potential as a flexible response mechanism to different industry and individual skills development needs has also been highlighted.
- Student perspectives on skill sets remain largely unknown. Views on skill sets gathered to date are largely those of industry and organisations representing social groups. National data collections do not allow for a good understanding of how individuals view qualifications and whether they think partial completion is a desired outcome. When studying students' uses and views of skill sets, it

will be important to explore separately the notion of skill sets as a 'building block' to an initial qualification and the notion that skill sets are a useful adjunct to qualifications already gained, a perspective for which there is wider support.

- There are marked variations in how different industries meet their skill needs, which may mean that the findings from the case study – the Agrifoods industry – are not applicable to all industries. Then again, Agrifoods is diverse and allows for the exploration of roles for skill sets in a range of enterprise types and occupations. It also permits examination of cross-industry training as a means of servicing the needs of the broader regional labour force with a subculture of incremental learning similar to that of Agrifoods. Skill sets may prove to be a useful tool for drawing more enterprises and their workers into the formal VET system across regional Australia.

Skill sets: origins and types

In this section the introduction of units of competency (unitisation) into the design of Australian VET is explained, particularly in the context of the emergence of skill sets alongside whole qualifications. The two types of skill sets that have emerged as a result of the dual training product design of Australian VET – that is, formal training package skill sets and skill sets designed by registered training organisations to meet specific requirements – are also described.

Unitisation of VET

Unitisation refers to the practice of defining VET in terms of units of learning outcomes (knowledge, skills and their application parameters) that are measurable in their own right but which also contribute to larger education outcomes. Some use the term ‘modularisation’ for this. However, the term modularisation is increasingly being reserved for the process of packaging and delivering learning in components (Cedefop 2008, 2011).

In Australia, unitisation in VET began to be introduced in the late 1980s, just as it did in many other countries (Hart & Howieson 2004). This approach, commonly referred to as a competency-based approach, gained momentum in the 1990s as part of a larger reform – the creation of a highly market-oriented Australian national VET system – that aims to improve the productivity and competitiveness of the Australian economy. The national VET system sits over and above the state-based systems. National industry bodies for VET (referred to as industry skills councils) were formed to provide advice on workforce skills development needs. Their role subsequently evolved into taking the lead on the development of a new training product, ‘the training package’.

Training packages are based on performance standards for the job roles and tasks expected in the workplace and as defined by Australian industries. The packages are made up of units of competency and specify rules for combining the units to achieve occupation-level learning outcomes and a VET qualification aligned to the Australian Qualifications Framework (AQF).

Training packages became fully operational across all industry sectors with VET occupations from 1997 and were expected to give rise to new learning programs that would replace the nationally accredited courses based on modules, developed earlier. This did happen across Australia: participation in national training package qualifications increased almost three-fold between 2000 and 2008, while participation in nationally accredited courses decreased dramatically, with this pattern repeated across all states and territories (Misko 2010).

Nationally accredited courses were not expected to disappear entirely; rather, they were to remain, as required, as a complement to training packages to address the skill requirements of industry, enterprises and the community, where these are not covered in nationally endorsed training packages (Australian Quality Training Framework 2007). Of the remaining nationally accredited courses, the vast majority, about 80% in 2008, are provided by the TAFE institutes (Misko 2010).

Together, training packages, as the dominant training product, and accredited courses, as the supplementary product, make up the single unified modern national framework for VET in Australia. While the emphasis of the framework is on whole qualifications, there is provision for students completing only some units of competency, fewer than those required for a full qualification. These

students can receive a statement of attainment. As noted by the Australian Qualifications Framework Council (2011, p.71):

Through the use of the statements of attainment the AQF acknowledges that completion of accredited units contribute [sic] to the progression towards achievement of an individual's lifelong learning goals.

And:

The statement of attainment must be in a form that ensures it cannot be mistaken for a testamur for a full AQF qualification (p.72).

Thus, the national framework for VET is made up of two complementary training products based on units of competency. It provides for recognition of qualifications aligned to the Australian Qualifications Framework and for less than full-qualification learning outcomes through a statement of attainment certification tool.

The unitisation of VET has potential benefits. A unitisation approach can:

- eliminate duplication of units common to more than one job or occupational area
- aid movement between learning programs through unit credit recognition
- aid access and progression in learning via a unit building block approach
- improve flexibility and responsiveness to changes in labour market needs and reduce costs of modifying VET to only those units in need of change
- improve quality by linking teaching to intended outcomes (Hart & Howieson 2004).

These benefits can be difficult to achieve. Countries have required ongoing re-evaluation of their unitised VET systems and modifications to overcome problems and concerns, such as qualifications fragmentation, atomistic learning, a proliferation of units and costly never-ending specifications of standards (Stanwick 2009).

Australia's unitised training framework has been reviewed on three occasions to ensure it develops as an effective mechanism for facilitating good labour market and educational outcomes for enterprises, industries, individuals and communities. Each review, in 2004 (Schofield & McDonald), in 2009 (National Quality Council) and in 2010 (Misko), found strong support for the framework, subject to its undergoing continuous improvement reforms. The reforms with implications for skill sets are outlined below.

Skill sets

In the Australian VET system when units of competency are combined into a related set below the level of a full qualification, they are referred to as 'skill sets'. Skill sets enable performance of functions or tasks. By comparison, whole qualifications produce learning outcomes that enable performance of a VET occupation. Skill sets are not qualifications but are a way of identifying logical groupings of units of competency which meet an identified learning outcome. In Australian VET, two types of skill sets have emerged, one associated with registered training organisations and the other with training packages.

Skill sets developed by registered training organisations

Skill sets have been part of the repertoire of training products of registered training organisations under the Australian Quality Training Framework for many years, albeit not always by this name.

Australian training organisations have long been identifying sets of units of competency that meet their individual and enterprise needs and delivering the set of units via statements of attainment and nationally accredited short courses developed by the organisation itself. These sets are highly flexible constructs and can contain units from more than one qualification and beyond the core units of a qualification, as well as from qualifications within training packages and other nationally and state-accredited qualifications. They have been made available to meet a range of client needs, including licensing and/or compliance requirements, an employer's specific workplace requirements, or a specific learning need of a social group, such as for language, literacy and numeracy.

Units packaged by a registered training organisation into a skill set have the capacity to be noted on a statement of attainment, which is awarded on their successful completion and which identifies them as delivered for a specific purpose.

Registered training organisations have begun to deliver the skill sets that have been introduced into training packages, as and when they prove useful to their clients. They also continue to deliver skill sets they have designed in consultation with their clients.

Skill sets in training packages

The groundwork for the inclusion of skill sets in training packages was laid in 2004 in the final report of the High Level Review of Training Packages, commissioned by the former Australian National Training Authority. The review examined all aspects of the design, development and implementation of training packages and proposed several new directions for their improvement. The theme running through the final report of the review was 'to hold some things tight while loosening the reins on others' (Schofield & McDonald 2004, p.4) and included holding tight to the importance of full qualifications, while giving greater weight to skill sets:

If Training Packages are to continue to serve the needs of both industry and learners, the status of full qualifications must not be eroded. At the same time, employers and individuals are increasingly valuing 'skill sets': discrete but cohesive components of learning, and we recommend steps to give them greater recognition, and at the same time give more weight to skill sets. (p.5)

Three steps were recommended by the review to give greater weight to skill sets, two of which have been implemented so far.

In 2006, a decision was made by the National Quality Council¹ and the Council of Australian Governments (COAG) to include identified skills clusters in training packages where there is industry demand. The skills clusters, to be known as 'skill sets' were defined as:

Those single units or combinations of units which link to a licence or regulatory requirement, or defined industry need. (National Quality Council 2006)

¹ The National Quality Council was established in December 2005 and replaced the former National Training Quality Council as a Committee of the Ministerial Council for Vocational and Technical Education to oversee operation of the National Skills Framework, including training packages, Australian Quality Training Framework standards and other quality assurance arrangements.

This definition reinforced another recommendation made by the High Level Review of Training Packages, that alignment of occupational licensing and regulatory standards with VET standards in training packages continues to be pursued to avoid regulators requiring additional standards (Schofield & McDonald 2004, p.20). The 'defined industry need' in the definition can cover advances in technology that create significant skills gaps within a job role, for example.

Principles and protocols for skill sets in training packages were developed, and included that training package skill sets must:

- have industry support
- be constructed of units of competency from training package qualifications, with the units drawn from one or more packages
- not include elective units, although some skill sets in training packages developed prior to April 2008 did include electives
- have identifiable relationships with a qualification, with advice provided on the relationships and any prerequisite learning outcomes
- not be purported to be qualifications
- be issued with statements of attainment on their completion that indicate that a specific licensing or regulatory requirement has been met (Department of Education, Science and Training 2007).
Examples of these types of statements of attainment include mine site induction or small business contracting.

The last protocol was developed in an attempt to take the second step recommended by the high level review: the enhancement of the market standing of statements of attainment. For skill sets in training packages, the statements of attainment issued show that the person has elected to complete a particular combination of units that meet an identified need. They do not make reference to being part of a full qualification, thereby implying that something has been unfinished, as was the case before 2007.

From 2007, each industry skills council, through its national consultation and continuous improvement processes for training packages, began to identify skill sets in order to meet the milestone specified by the Council of Australian Governments that, from 2009, skill sets would become a formal part of the design of VET qualifications in training packages. Three possibilities in relation to the inclusion of skill sets in training packages were identified. On the basis of industry consultation, a national industry skills council could conclude that:

- No national skill sets are identified.
- One or more skill sets can be identified using units of competency from within a single training package.
- Skill sets can be identified by combining units from two or more training packages (Training Packages at Work website <<http://www.tpatwork.com/Back-2-Basics/Delivery-basics/Skill-Sets.aspx>>).

Since 2009, there has been a proliferation of skill sets in training packages, as documented in the next chapter. As yet, however, the third step recommended by the high level review has not been achieved: their inclusion in the Australian Vocational Education and Training Management Information Statistical Standard (AVETMISS) to enable national reporting on enrolment and achievements in skill

sets. Capturing skill sets is part of the forward plan for AVETMISS and involves defining and coding skill sets comprehensively and developing a mechanism for implementing coding of skill sets (NCVER 2010).

Subsequent training product reforms and skill sets

The recent review undertaken by the Council of Australian Governments and the National Quality Council, *VET products for the 21st century*, has altered somewhat the features of the two types of skill sets as explained above. This review, undertaken in 2008–09, reaffirmed the strong commitment among VET stakeholders to the continuation of a single cohesive VET framework (of training packages and accredited courses). However, it also found that greater flexibility in qualification structures was required in order for the framework to meet a wide variety of needs – from traditional trades industries, to newer or unregulated industries.

As a result of the review, changes to the packaging rules for training package qualifications were approved in late 2009. They were applied to all training packages progressively during 2010 and by June 2011. An exception is qualifications for licensed and trade occupations. Other training package developers were also able to seek exemption if they could demonstrate a compelling business case.

The current packaging rules for training package qualifications are:

- At least a third of the units for training package qualifications should be electives.
- The elective units can be included from within the host training package, from other training packages and from accredited courses.
- Up to one-sixth of the total units can be ‘imports’ from other sources (National Quality Council 2009).

The new rules have two implications for skill sets initiatives. The first rule potentially narrows the units that can be incorporated into skill sets in training packages, although the concomitant evidence base established by the National Quality Council shows that almost three-quarters of training package qualifications already contain one-third or more of electives. The second rule expands the potential of skill sets developed by registered training organisations. Until this time, only training package units of competency could be used by accredited courses and not vice versa, with a few exceptions, where such components have been mainstreamed during the review and continuous improvement process of training packages. Now accredited course units can form electives in training package qualifications.

Summary: the two types of skill sets in Australian VET

The use of units of measurable learning outcomes or competency as the basic building block in Australian VET has enabled skill sets to emerge as a sub-product to whole qualifications, and the dual training product design of Australian VET has led to two major types of skill sets being recognised: skill sets in training packages and skill sets developed by registered training organisations. The key features of the two types are summarised in table 1.

The two types of skill sets differ in their composition. Training package skill sets are made up of prescribed units of training package qualifications, while those developed by registered training organisations are flexible constructs made up of units of competency from any source that meets client needs.

The assigned status of each type is also different. Skill sets in training packages are referred to as ‘industry endorsed’ and deemed to be of national value in their own right in the statements of

attainments issued. Skill sets developed by registered training organisations as training package statements of attainment or accredited short courses are referred to as 'endorsed' and 'of local value'. They are recorded as a cluster of skills from broader nationally recognised qualification(s)/course(s). 'Of local value' means of value to the clients of the registered training organisation, which these days may not be local. Clients of registered training organisations can include enterprises that operate nationally. However, the potential for accredited course skill sets developed by training organisations to be built into training package qualifications has been brought into focus, with recent changes in rules relating to the composition of qualifications in training packages and as a flexible response mechanism to different industry and individual skills development needs.

Table 1 Key features of the two types of skill sets in Australian VET

Feature	Training package skill set	RTO-developed skill set
Availability	2009	1990s
Purpose	Meet a national industry specified: <ul style="list-style-type: none"> ▪ licensing requirement ▪ regulatory requirement ▪ other industry need 	Meet RTO/individual/enterprise determined needs not met by training packages
Composition	Predefined core units of competency from training package qualifications; no electives	Flexible combinations of units of competency from any source that meet client needs. They can include combinations of accredited and national units of competency
Crossover capability	RTO-developed skill sets can be incorporated into training package qualifications as of 2010	Training package units of competency have been able to be used in accredited courses since their inception
Development process	Standard training package review process that shifted from a 3-year cycle to a regular improvement cycle in 2008–09	Negotiated between an RTO and enterprise and individual clients, any time
Recognition	National industry endorsed product Statements of attainment state: <ul style="list-style-type: none"> ▪ the specific licence or regulatory requirement they meet or other defined industry need 	RTO-developed local product Statements of attainment state: <ul style="list-style-type: none"> ▪ the individual has completed specified units from nationally recognised qualification(s)/course(s) ▪ can include additional brief information reflecting an identified purpose
Recording/reporting	Proposed in national VET statistics forward plan (NCVER 2010)	Some RTOs code and report as a completed statement of attainment

Source: Constructed by the authors.

Skill sets: rationale, benefits, issues and recommendations

The rationale for skill sets and their perceived specific benefits and issues are reviewed in this section. Also reviewed are the latest policy recommendations, which were constructed in an attempt to take skill sets forward in a positive manner.

Rationale for skill sets

The main reasons cited in Australian literature for continuing to utilise skill sets are twofold, namely:

- to meet needs for flexibility and responsiveness to changes in labour market requirements
- to reflect individual learning paths and all the positive outcomes achieved from VET.

To provide for flexibility and responsiveness to labour market needs

The labour market is constantly changing and during the process influences skills development needs. How work has been changing for different VET occupations has been examined by Misko (2010). At the same time, she examines how well the VET system framework of training packages and accredited courses has responded. The consistent message was that the core basic skills of most VET occupations have not changed in any significant ways over the last 20 years. It is the environment in which skills are applied that has changed.

Significant changes in VET skill requirements of the labour market result from:

- general advances in information technology, design technologies and telecommunications
- general advances in regulatory frameworks, including those that apply to workplace and occupational health and safety, specific industry regulations, taxation, and goods and services tax legislation
- the drive for increased productivity and accountability, which has led to changed work practices, more efficient work organisation and an increased focus on quality assurance and control.

Flexibility and responsiveness in VET would appear to be most required in the three areas specified above. Misko (2010) has shown that this is being achieved, particularly through the rapid development of skill sets.

In a content analysis of skill sets in training packages, Misko located 178 skill sets across endorsed training packages on the National Training Information System website as of early September 2009. By early August 2010, the number of skill sets had increased to a total of 323, with Misko noting that skill sets in some training packages were still to be developed, or endorsed. Misko's content analysis of 200 randomly selected, nationally accredited courses for 2008 found that the topics covered included environmental sustainability, health and digital media, for example. A small number of courses were also aimed at preparation for licences or permits to meet state-specific occupational health and safety requirements. Misko concluded that accredited courses are being offered in areas where there are skills gaps and emerging skills issues not well covered in training packages or meeting the requirements of industry, government or community stakeholders.

Skill sets can also enable particular employers to tailor VET to their specific workforce requirements and specialisations. Skill sets developed by registered training organisations in consultation with their clients and delivered via statements of attainment and accredited short courses are often justified on this basis.

The evident industry and employer support for skill sets should come as no surprise. The main reason cited by employers for using nationally recognised training concerns regulatory requirements (33.2% in 2007). The bulk of the regulatory ‘push factor’ for employers to train their staff requires only skill sets, for example, for licences to work with certain equipment (a forklift) or materials (chemicals), although there are certain occupations where a full qualification is required for entry.

The two other main reasons employers give for training are to ensure the availability of the skills required for the job (29.8%) and the maintenance of professional or industry standards (27.8%). To meet these needs, many employers (49% in 2007) are happy to use unaccredited training for its convenience, flexibility and cost-effectiveness – by comparison with the available equivalent nationally recognised training (NCVER 2008).

Many case studies have found that employers care about competencies and not qualifications – as well as the relevance of training and the flexibility of delivery – more than who provides it and whether or not it is accredited. This said, there are marked differences in how employers meet their skill needs. These are dependent on both industry sector and the size of enterprise. Small and medium-sized employers in particular have reported consistently that full-qualification training involves some unnecessary training relative to their needs. They do not want to pursue full-qualification training unnecessarily (Cully 2005; Blythe & Bowman 2005).

To reflect individual learning paths and all positive VET outcomes

Many VET students complete only some units of competency towards a VET qualification. This fact is commonly cited as a strong indicator that individuals are also only looking for skill sets and not whole qualifications. This may be the case, since in VET in some jurisdictions learners can only enrol in whole qualifications even when they simply want a single or only some unit(s) of competency. However, there are many potential reasons for non-completion of a full qualification.

The conversion rate of enrolments to qualifications awarded in Australian VET is certainly low. The findings of three VET system-level analyses of the completion rates of student qualifications are shown in table 2. The studies suggest an overall VET qualification-completion rate in the vicinity of 27–30%. The rate rises a little for those who might be expected to want a complete qualification, that is, full-time students aged 25 years and under with no prior post-secondary school qualification.

Table 2 Study findings on VET qualification completions rates

Study	Estimated rates
Foyster et al. (2000)	Nearly 50% of all students were partial completers and a further 27% full-qualification completers.
Shah & Burke (2003)	The overall qualification-completion rate is suggested to be 30.3%, the partial completion rate 35.0% and the withdrawal rate 34.7%.
Mark & Karmel (2010)	The national estimated qualification-completion rate is 27%. For the subgroup of full-time students 25 years old and under with no prior post-secondary school qualification the rate is 34.7%.

Note: The techniques used to determine the rates are not necessarily the same for each study.

It is dangerous, however, to assume that partial completers of qualifications were only looking to acquire specific skills and did not intend to complete the full qualification. For example, a one-off survey of 1600 retail trainees, across three very different registered training organisations found that almost all of the non-completers gave a work-related or home/family/relationship-related reason for not completing. Almost 100% of students withdrawing indicated that they intended, at the time of enrolment, to complete the full program. The assumption held by some, that the students did not complete because they never intended to complete the program and gain the full qualification, was not supported (Mitchell and Associates 2011).

Alternatively, the annual national Student Outcomes Survey provides some broad indicative data that at least some individuals are only looking for skill sets and not whole qualifications. This survey distinguishes partial completers (those who successfully complete part of a course and then leave the VET system [module completers]). It has consistently found over several years that the vast majority of partial completers (82.0% in 2008 and 2009) achieved fully or partly their main reason for doing the training. Of note, however, is that almost 30% of all partial completers were in VET for personal development reasons as opposed to job or further study reasons (NCVER 2009).

The reality is that current national VET statistics and research do not allow for a good understanding of how individuals think about qualifications and whether they consider partial completion a desired outcome. It is not known how many learners enrol in a whole qualification in order to complete a skill set – industry-defined or otherwise.

To help fill this knowledge gap, NCVER conducted a one-off student intentions survey at the time of enrolment in February 2011. The survey found that 92.6% of students enrolled to start a VET course leading to a qualification intended to complete it and 7.4% of students intended to complete subjects only. Four months after training started, 12.4% of those intending to complete the full VET course had left without completing and 46.7% of those intending to do some subjects only had left. The survey did not provide data on the students' reasons for not completing the courses they had enrolled in. Allowing for enrolments in skill sets and the capacity to code and report them might provide more specific answers.

Specific benefits and issues associated with skill sets

The need for skill sets in VET is substantiated by claims about their usefulness for:

- creating pathways to qualifications
- providing opportunities for skills top-up
- attracting and engaging more clients to the formal VET system.

These claims have been made by industry skills councils and other VET stakeholders in response to the discussion paper on the future of Australian VET (Skills Australia 2010, 2011).

Skill sets offer pathways to qualifications

One specific argument for skill sets is that they offer a stepping-stone pathway to a qualification. Skills Australia noted that this argument is made particularly in relation to the disadvantaged and those returning to education and training, and that this is an important point, particularly given the strong case for Australia's need to attract more disadvantaged learners into education and training in order to increase workforce participation.

VET policy should acknowledge that the needs of such learners are often best addressed incrementally through the development of skill sets and the provision of intermediate pathways to full qualifications. (TAFE NSW Social Inclusion Unit submission to Skills Australia 2010)

Skill sets have an important function as a means of recognising skills acquisition and serving as a stepping stone to further learning for disadvantaged learners.

(National VET Advisory Council submission to Skills Australia 2010)

It is suggested that skill sets can ease the difficulties of the financial cost and time required to complete programs as well as provide the opportunity to build up confidence among those who may be daunted by the prospect of undertaking the full load of formal training associated with a qualification.

Skill sets certainly enable learners to undertake recognised learning in small 'chunks' but there is currently no quantitative evidence to support the contention that skill sets are being used as stepping stones to a qualification by the disadvantaged or anyone else. There is anecdotal evidence such as the following:

Stories abounded of the benefits accruing to individuals who undertook skill sets. For individuals, if the training is working, they go off and get a job, effectively completing a skill set rather than a qualification. The training is providing a bridge back into work ... Examples included:

- individuals who commenced a skill set in rural production studies and who were able to progress through Certificate II, III and IV once they had positive experiences of learning
- skill sets delivered in correctional centres, where short, sharp delivery enabled prisoners to take a portable set of skills onto another centre or into the community as a pathway to a qualification and work
- a skill set of units from the Community Services Training Package was delivered to Indigenous learners working on night patrol. The units provided participants with the skills to undertake the job role safely and excluded those relating to administration that would require a higher level of literacy support. The skill set gave the participants a pathway to the certificate III and enabled them to continue their learning in the workplace if they wished. (Lista Consulting 2010, p.9)

The lack of hard evidence that skill sets lead to a full qualification for those without a previous post-school qualification leaves the door open for counter-arguments.

Concerns are also raised about focusing too much on skill sets as a pathway to an initial qualification. It is felt that this might make it harder to create an ongoing learning culture. For example, an individual might stop training upon completion of a skill set, with the aim of reaping the immediate benefits of a narrow job role. Skill sets provision may result in individuals with limited adaptability and mobility and high vulnerability in the labour market, as they are unable to perform a full occupation role. Trades industries, for example, regard skill sets at the lower AQF levels as a possible dilution of the essential range of skills required to perform effectively in an occupational role.

Quantitative studies consistently show that individuals with qualifications have superior labour market outcomes. Individuals with qualifications are more likely to be employed and working full-time, and have higher earnings. Qualifications provide an important market signal to employers for recruitment purposes and further learning opportunities once in employment, as well as a career pathway. However, some studies do indicate that it is higher-level VET qualifications that most result in these positive returns, while the benefits for an individual completing a lower-level qualification are less certain but are not to be dismissed completely (Stanwick 2005; Karmel & Nguyen 2007).

In summary, skill sets as an initial training option have the potential to improve access to VET but some argue that such access needs to lead to a full qualification eventually to protect individuals against a fragmented work future. A culture of lifelong learning or a building-block approach to learning needs to be present.

Skill sets provide useful top-ups for those with qualifications

A second argument for skill sets is that they enable workers to build on their existing qualifications to keep their skills up to date or to develop skills in a new area without their having to complete a full qualification. This enables them to progress in an industry, to move between different sectors in an industry or into a new industry.

This argument extends to university-qualified participants who are looking for some complementary practical skills through VET.

Many industries are focusing on the use of skill sets for the already-qualified. For example:

- Community Services has identified a large number and wide range of skill sets in its training package that enable a worker with an initial qualification to move within its large internal labour market sectors. Some skill sets build workforce capacity by expanding worker capability in a lateral fashion through the development of skills in new areas, such as disability, aged care and social housing. This training package also includes skill sets that build in additional skills and capabilities for existing workers with qualifications, allowing them to progress in their careers, including to service delivery and management roles (Community Services and Health CHC08 Training Package Version 3 March 2011).
- Nursery and garden enterprises include many already-qualified workers looking for quick top-up training in areas such as human resources, sales and marketing, business management and finance. Emerging skill set needs have also been identified in supply chain management (two units) and in bio-security, where there are a number of units to be cherry-picked across different training packages (Lista Consulting 2010, p.8).
- Resources industries opt for skill sets as they can be delivered in a short period of time and be directly related to operational compliance requirements. Furthermore, mining and other resources industry projects often don't run the full time taken to obtain a qualification, which means that undertaking skill sets gives employees the opportunity to move on to the next project or mine site with a stepping stone towards a qualification (Lista Consulting 2010, pp.8–9).

Overall, the use of skill sets among the already-qualified has considerable support. Skills Australia referred to it as 'qualified support for skill set ... as skills top-ups for workers with existing skills and qualifications' (Skills Australia 2011, p.121).

Skill sets are a tool to draw more clients into the formal VET system

The other main suggested benefit of skill sets is that they provide an opportunity for registered training organisations to engage more enterprises and their workers in nationally recognised training. This applies particularly to small and medium-sized enterprises that may have been reluctant for a number of reasons in the past, such as time sensitivities, arduous paperwork requirements or the requirement to undertake unnecessary training, to achieve a qualification (Innovation and Business Skills Australia website <<http://www.ibsa.org.au/>>).

The cotton industry is an example. In this industry, the main driver for grass roots growers is the skills needed to get the job done, not the qualification. For both employers and workers, the focus is on building blocks of skills and experience. They struggle to differentiate between formal and informal learning. They think about field days, grower groups and workshops, not TAFE and qualifications. These views have been confirmed by a set of structured conversations held in June 2010 with groups comprised of producers and farm services in four locations (Emerald, St George, Dalby and Narrabri; Lista Consulting 2010).

There is evidence that an incremental approach may work in gaining enterprise and worker commitment to nationally accredited training (Cully 2005; Smith et al. 2005). Initially they recognise that the competencies they most value are available in nationally accredited training; this interest then extends into other recognised competencies and, finally, recognised competencies and qualifications become embedded in the organisation's human resource management system. Cully (2005) and Smith et al. (2005) noted seven benefits of providing nationally recognised training that larger employers in particular have identified:

- a structured approach to training and career progression
- the opportunity to integrate training with normal work and to customise training packages to enterprise needs
- confidence in the quality of work undertaken by employees and the ability to demonstrate this to external parties
- a competitive edge in attracting and retaining staff
- access to funding to help cover training costs
- the ability to reward and motivate employees and validate their work experiences
- the basis for reshaping human resource management systems around competency standards.

Summary of the various perspectives on skill sets

The rationale for skill sets is their capacity to be part of the more flexible and responsive VET solutions required to meet changing labour market needs and to provide individuals with economic and useful chunks of learning. The primary concerns about skill sets are that they may confine some individuals to narrow job roles, reduce their labour mobility, erode the value of full qualifications and, in time, reduce the quantum of fully qualified workers at the particular occupation level required to sustain industries and Australia's economic competitiveness.

Overall, the literature reveals that a variety of views on skill sets prevails, along with a lack of hard evidence to support or refute them.

Skill sets: latest recommendations

Skill sets have their supporters and opponents and those who give qualified support for the reasons outlined above. Skills Australia's considered view of the different perspectives was that:

On balance we consider that there is merit to the argument that skill sets are capable of meeting a range of needs, including as a pathway to qualifications, as a tool for workforce development in enterprises, and as a mechanism to provide skill top-ups, particularly for existing workers.

(Skills Australia 2011, p.122)

Skills Australia explained the challenge with regard to skill sets as being: 'to open up the pathways that benefit clients of the sector without creating the perverse impacts that some stakeholders fear' and to overcome 'the lack of clear policy in the funding of skill sets that is causing confusion among stakeholders about availability' (p.122). Funding of skill sets is occurring haphazardly. Some individuals and enterprises are paying for clusters of units of competency, while others are enrolling in publicly subsidised qualifications and simply completing the units they want, for which they receive a statement of attainment.

The recommendations on skill sets that Skills Australia has put forward are outlined in table 3. As can be seen, Skills Australia has maintained its focus on whole qualifications, while giving greater weight to skill sets, and has called for an evidence base on skill sets to be developed to inform future policy.

Table 3 Skill sets: recommendations of Skills Australia

Recommendations 19 d) and e)

That a proportion of public funding in both the enterprise-responsive and individual-based funding streams for skill set delivery be made available within the parameters below

That the impact of skill set delivery on enterprise workforce development and on achieving pathways to higher-level learning and work be assessed three years after the commencement of these funding arrangements (p.17)

Parameters for public funding of skill sets

Only to training package identified skill sets at this stage and subject to their identification by a national code to enable tracking of uptake and impacts

Only for learners without a qualification if there is a guaranteed pathway to one

Industry skills councils to provide a mapping of the pathways from each identified skill set to relevant qualification

Will not extinguish entitlement to public funding for a qualification

Stronger quality arrangements for RTOs to minimise the potential for a proliferation of providers delivering what they might see as quick and cheap offerings

RTOs to demonstrate a track record of achieving pathways from skill sets to higher-level learning for their learner cohorts for a period of at least two years (p.123)

Source: Skills Australia (2011).

Skills Australia confined its recommendation on the public funding of skill sets to those contained in training packages because:

at this stage it is difficult to identify the RTO-developed skill sets. If skill sets are to be funded as a way of providing skills deepening, workforce development and pathways into further learning and work, they must be able to be clearly identified, tracked and measured. This is also essential to measure impacts, including the risks of any negative impacts on qualifications completions (p.122–3).

Skills Australia considered that research into the skill sets in training packages was possible only in the medium-term – after they have been coded and recorded as part of the national VET enrolment and completions statistics collection. However, TAFE NSW has a database containing skill sets it has developed to support its registered training organisations (TAFE institutes), particularly completions in the form of statements of attainment. Hence, a research project was developed to provide earlier-than-expected evidence to support or refute the claims made about skill sets. The project involves a case study of the learning and work pathways of students who have participated in skill sets training developed by TAFE NSW and the Agrifoods industry by comparison with students who have enrolled in agribusiness qualifications courses.

Implications for the research study

This paper has reviewed the available literature on skill sets inclusion in the design of Australian VET and addressed the first question posed by the research study:

Q1. Why skill sets in VET? What have been the drivers for the development of the current policies and practices?

Some important messages for the research study have emerged from the review, which are discussed in this section.

Terminology is an issue: skill sets

As has been explained, there is more than one type of skill set. Rigour will be required in the study to ensure there is a good understanding of the skill sets under investigation. The study is focused on skill sets developed by TAFE NSW to support its TAFE institutes.

A working definition of skill sets developed by registered training organisations (for statements of attainment and accredited short courses) adopted for the purposes of the study is:

a grouping of one or more units of competency, fewer than those needed to achieve a qualification, that meet the skills development needs of an individual in an enterprise or industry sector.

The skill sets developed by registered training organisations are more flexible than training package skill sets, which are confined to prescribed units of training package qualifications.

Relationships between skill sets types will be important to consider

The potential for accredited course skill sets to be built into training package qualifications to enable tailoring to various employers' and individuals' skills development needs has been brought into focus as a result of recent changes in rules relating to the composition of qualifications in training packages. The relationships between TAFE NSW-developed skill sets and training package skill sets will be considered for this reason, and also to determine whether the stronger focus on training package skill sets in current policies is justified. The project team has commenced this process. Table 4 contains a comparison of skill sets responding to training needs in the safe use of agricultural and veterinary chemicals.

The table shows a skill set developed as an accredited course by TAFE NSW (Smarttrain – Chemical Application [91186NSW]) alongside the chemical use skill set recently endorsed in the Training Package of AHC10 Agriculture, Horticulture and Conservation and Land Management, and the new TAFE NSW skill sets developed to address the range of training needs not covered by the national training package skill set, but previously met by the accredited course Smarttrain.

Table 4 Chemical use skill sets compared and inclusion in an accredited course

Skill set	Units	Explanation
<i>Previously developed TAFE NSW flexible chemical skill set</i>		
Course in Smarttrain – Chemical Application (91186NSW)	Compulsory units	This flexible skill set meets a range of legislative training requirements as well as enterprise and industry requirements
	NSWTHAZ301A Manage residues in product	
	RTC2701A Follow OHS procedures	
	RTC3704A Prepare and apply chemicals	
	RTC3705A Transport, handle and store chemicals	
	Elective units	
	NSWTFUM301A Manual fumigation for vertebrate and invertebrate pests	
	NSWTHAZ201A Use hazardous substances safely	
	RTC1701A Follow basic chemical safety rules	
	RTC2306A Operate vehicles	
	RTC2309A Operate tractors	
	RTC2706A Apply chemicals under supervision	
	RTC3401A Control weeds	
<i>Current National Training Package Skill Set</i>		
Agricultural Chemical Skill Set (AHC10) #18950	AHCCHM303A Prepare and apply chemicals AHCCHM304A Transport, handle and store chemicals	Starting point for chemical application training nationally. Does not allow for specific additional requirements or state-based differences. The national skill set is used as the basis for the Victorian ACUP (Agricultural Chemical User Permit) but does not allow for additional training in 1080, fumigants or Pindone required to attain the ACUP via an endorsement. It also satisfies NSW Pesticide Regulation 2009 for the unsupervised application of pesticides that specifies the two level 3 units as the requirement, unless the learner is unable to achieve the level 3 units, then the one level 2 unit is the minimum
<i>TAFE NSW skill sets addressing the range of training needs not covered by the national training package skill set but previously met by the Course in Smarttrain — Chemical Application (91186NSW)</i>		
Chemical application under supervision #20066	AHCCHM101A Follow basic chemical safety rules AHCCHM201A Apply chemicals under supervision	Satisfies current minimum NSW legislative requirements (see below)
Chemical application #10102	AHCCHM201A Apply chemicals under supervision AHCCHM303A Prepare and apply chemicals AHCCHM304A Transport, handle and store chemicals	Satisfies NSW Pesticide Regulation 2009 for the unsupervised application of pesticides that specifies the two level 3 units as the requirement unless the learner is unable to achieve the level 3 units, then the one level 2 unit is the minimum. Where a participant is not competent at level 3, there is an exit point at level 2 that satisfies current NSW legislative requirements
Agricultural manual fumigation #10103	AHCCHM303A Prepare and apply chemicals AHCCHM304A Transport, handle and store chemicals AHCCHM305A Conduct manual fumigation of vertebrate and invertebrate pests	This skill set meets the NSW legislative requirement for training for on-farm manual application of aluminium phosphide or chloropicrin
Chemical application and weed control #10104	AHCCHM201A Apply chemicals under supervision AHCCHM303A Prepare and apply chemicals AHCCHM304A Transport, handle and store chemicals AHCPMG301A Control weeds	Satisfies the training requirement in Queensland to apply some restricted chemicals or to apply broadacre pesticides to land not owned or occupied. Approved accreditation requires statements of attainment certifying completion of the units in this skill set

Note: Units of competency in training packages each have a unique code of 12 characters. The first three signify the training package — AHC in the above. The next up-to-eight characters relate to an industry sector, function or skill area. The last letter character identifies the unit of competency version. An 'A' indicates this is the original unit; a 'B' onwards that minor changes have been made to clarify intent. Where changes alter the outcome, a new code is assigned and the title changed.
Denotes the TAFE NSW course no.

The comparison provided in table 4 illustrates a current need for flexible skill sets to meet current legislative and industry requirements. It supports the following finding of a recent evidence-gathering report on the training requirements of the Agrifood industries:

Stakeholders' view of building blocks or skill sets is a much more flexible construct than that of Skill Sets as nationally defined. Simply making Skill Sets available as they are currently defined [in training packages] will not answer the call by industry and individuals.

(Lista Consulting 2010, p.4)

The project team will compare other skill sets examples developed by TAFE NSW with the skill sets in AHC10, the Agriculture, Horticulture and Conservation and Land Management Training Package. There are currently ten skill sets in the AHC10.

Individuals' uses and views on skill sets require clarification

In the skill sets debate the 'voice' of the individual has so far not been strong. The available national VET statistics and research do not allow for a good understanding of how individuals think about qualifications, whether they think partial completion is a desired outcome, and the number of learners who enrol in a whole qualification in order to complete just a skill set. This study aims to fill this gap in the knowledge base.

The study is focusing on students who have participated in skill sets training developed jointly by TAFE NSW and the Agrifoods industry. TAFE NSW has access to an extensive historical database that can deliver statistics on enrolments and completion rates in Agrifood skill sets. The database is significant. TAFE NSW institutes deliver approximately 25% of all publicly funded training in Agrifoods in Australia. The project will also analyse the skills development pathways of students enrolled in diploma-level qualifications to determine whether skill sets have been used as building blocks to a qualification or to meet separate skills development needs not directly related to the diploma qualification.

Skill sets may suit some individuals more than others

The literature review makes it clear that skill sets may suit some individuals more than others. The study will test the claims that skill sets are a useful building block to VET qualifications separately from the claim that skill sets are a useful adjunct to whole VET qualifications.

Views on skill sets are diverse

The VET system struggles to maintain a single cohesive framework that meets everyone's needs. What works for one industry may not work or suit another. The project team and its audiences will need to be cognisant of the different views on skill sets as part of the VET framework.

The Agrifoods industry's view on skill sets sits at one end of the spectrum on this topic: it is a strong supporter of skill sets delivery *in addition to* qualifications. In its submission to Skills Australia, Agrifood Skills Australia (Skills Australia 2010) wrote:

While significant sections of the agrifood industry support full qualifications as a means of skilling their workforce and individuals use them as a means of gaining employment in a sector of their choice, many enterprises need their workers trained in the skills required to do the job at hand. Many individuals in these workplaces want no more than the training that will help them get a job, keep it, or will be a means of progression.

Skill sets appeal in Agrifoods because the industry does not support a culture and history of credentials and there is no economic imperative as there is no credentialled barrier to entry to the industry. There is however a culture of lifelong learning through a whole range of extension programs that are short and tightly focused and often fit immediate and practical needs. Skill sets offer the same sort of response and some in this industry are starting to see the benefits of VET, in terms of its structure and way to measure outcomes and skills (Agrifood Skills Australia 2011).

The project team will need to give due consideration to the characteristics of the Agrifoods industry by comparison with those of other industry sectors when drawing general conclusions on skill sets.

Then again, the Agrifoods industry is diverse and offers an opportunity to consider skill sets in a wide range of contexts:

- large-scale multinationals, to family-owned micro-businesses
- rural and remote-based operations, to those in the major capital cities
- terrestrial and water-based working environments
- casual and seasonal employment, to permanent full-time work
- high-level science and technology-focused occupations, to basic labouring roles
- some workers with low levels of language, literacy and numeracy and/or from non-English speaking backgrounds (Agrifood Skills Australia 2011).

Furthermore, the Agrifoods industry adopts a skills ecosystems approach to its skill needs. It recognises the interdependence of co-located industries and seeks effective cross-industry training to meet skill needs, and notes:

The culture of incremental learning is prevalent across Regional Australia – not just agrifood – and follows a clear and significant pattern. Course completion rates across all industries decline with increasing remoteness: with students in major cities more than twice as likely to complete as those students living in remote or very remote areas. Throughout consultation for the 2011 Environmental Scan, enterprises and industry bodies alike have continued their calls for the proactive and systemic funding and delivery of Skill sets, individual units of competency and full qualifications.

(Agrifoods submission to Skills Australia 2011)

Skill sets may prove a useful tool to draw more clients into the formal VET system in regional Australia to meet the need for VET to be flexible and responsive to changes in labour market needs, and to reflect all the positive outcomes that individuals achieve from VET.

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