

Manufacturing and Engineering Training Package (MEM)

Essential Features Guide - March 2021

Administrative Information

Name of Industry Reference Committee (IRC):

Manufacturing and Engineering Industry Reference Committee.

Name of Skills Service Organisation (SSO):

Innovation and Business Skills Australia (IBSA Manufacturing).

About the Industry Reference Committee

The Manufacturing and Engineering IRC is responsible for national training package products that set the occupational standard for competency across the manufacturing and engineering industry. These products are relevant to people who conceive, design, make, assemble, install, repair, package and sell manufactured products.

The training products relevant to this industry coverage area can be found in the:

- [MEM Manufacturing and Engineering Training Package](#)
- [MEM05 Metal and Engineering Training Package](#)
- [MSA07 Manufacturing Training Package](#)

The [IRC is comprised of industry experts](#) from a broad range of industry subsectors including employer organisations, unions, industry associations and individuals with specific sector expertise. Membership of the IRC is determined by the [Australian Industry and Skills Committee](#) (AISC).

The IRC consults widely during the training package development process, providing multiple opportunities for interested parties to contribute to the IRC's work.

Technical Advisory Committees (TACs) are often established to inform training package development work, utilising a broad range of stakeholders with technical and specific industry knowledge.

The Manufacturing and Engineering IRC is supported by the Skills Service Organisation IBSA Manufacturing. For more information visit [IBSA Manufacturing](#).

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Forward

Of all industries actively participating in Australia's vocational education and training (VET) sector, the manufacturing and engineering industries have perhaps had the most involvement with, and influence on, the National Training Reform Agenda and the development of Australia's national competency-based training system.

The Manufacturing and Engineering Training Package (MEM) represents the most recent suite of vocational qualifications and units of competency developed to equip the manufacturing and engineering workforce with high quality occupational skills.

The scope of the MEM Training Package and the structure of qualifications and range of units of competency reflect the long-held commitment of the manufacturing and engineering industry to competency-based skills formation. This commitment predates Training Packages and has its origins in the National Training Reform Agenda and Award Restructuring movements of the late 1980s and early 1990s.

The first set of manufacturing and engineering competency standards were developed in 1991, seven years before the first MEM Training Package (MEM98) was endorsed. These early sets of standards were used to support skill related initiatives outside of formal VET including the development of skills-based classifications in Awards and agreements. This in turn, led to the development of viable career paths, and the adoption of emerging manufacturing work practices associated with multiskilling, teamwork, and an emphasis on the quality of an employee's own work rather than traditional 'end of line' inspection.

The relevance of this history to present users of the Training Package lies in the recognition that the MEM Training Package has evolved with the development of a modern manufacturing industry. It reflects assumptions about how skills are used in the workplace and assumptions held by employers and employees about the direct relationship between skills and industry occupations. While the MEM Industry Reference Committee (IRC) strongly supports qualifications based on competency standards for traditional training purposes, there is also a recognition that the manufacturing and engineering competency standards go well beyond their utility for training providers. They need also to be used in the workplace as a tool for work organisation, job analysis, training needs analysis and recognition of employee skills.

It has been a deliberate and longstanding practice of the Manufacturing and Engineering Industry stakeholders to acknowledge the historical drivers for establishing a skills framework in manufacturing. The industry has traditionally relied on the development and consolidation of competency through the integration of employment-based work practice and formal learning that is still reflected in the MEM Training Package today. This ensures workers continue to have the skills they need for effective performance in the workplace.

This Essentials Guide provides additional detail and background on some of the strategies used in the MEM Training Package to meet the different aims mentioned above and to provide advice about how these strategies should be implemented by the training system.

Background

Training Packages consist of qualifications and units of competency designed to specify the standard of performance expected in the workplace.

In the metal and engineering industry there has been a long process of defining what is meant by ‘performance in the workplace’ that has included having regard to the context in which a skill is applied. It is easy to imagine a narrow definition that focuses on an individual’s ability to perform a technical skill, say measuring something. This, however, undermines the context and workplace aspect of performance where knowledge and abilities such as the selection of the correct measurement equipment for the task, understanding the purpose of the measurement in relationship to other downstream processes to be undertaken, and the ability to apply the measurement may all contribute to whether someone should be regarded as competent in measurement to the standard expected in the workplace.

This broad understanding of what constitutes competent performance of a workplace skill, and that the performance of the skill must always have regard to the context in which it is applied, was one of the foundations underpinning of the early versions of the MEM Training Package, and is still true today.

In 1987, the Australian Council of Trade Unions (ACTU), the metal unions (MTFU) and Metal Trades Industries Association (MTIA), as parties to the key benchmark Award, the Metal Industry Award, had made clear their joint views that:

- skills were central to future competitiveness
- the skills issue was more than a focus on skills shortages and skills supply issues
- skills issues for all levels of the workforce including management were of concern
- skills were best defined by industry ownership of the process and direct involvement of the workplace
- reforms to VET were required if change was to be achieved in industrial relations especially at the Award level
- there was substantial scope for cooperative action.

The report ‘*Towards a New Metal and Engineering Industry Award*’ (September 1988) became one of the pivotal statements of the period in terms of desired industry outcomes for education, training and skill development. A summary of what the metal industry parties wanted from the training system was given in Recommendation 3.23 of that document.

“All off-the-job training provided under the national industry training and recognition system should be:

- *Modular*
- *Related to the career paths laid down in the new Metal and Engineering Industry Award*
- *Competency-based*
- *The subject of agreed and nationally accepted cross-credit arrangements*
- *Integrated with on-the-the job training to ensure both forms of learning are mutually reinforcing*
- *Broad based*
- *Available to all employees*

- *Responsive to new production techniques and changes in technology and made less intimidating to those who have been absent from the training system for some time*¹

Besides being one of the first industries to develop national competency standards, the metal and engineering industry was one of the first to develop a national skills-based classification and pay structure consisting of 14 levels from production worker to professional engineer. This classification structure replaced a previous narrowly defined structure of over 360 mostly task-based classifications, and it remains the basis of the Manufacturing Award today.

The proposal that employees should be classified and paid on the basis of the skills they used, rather than the tasks they performed, was one of the most radical and yet simple propositions to come out of Award Restructuring. It is also one of the most enduring results of Award Restructuring. Notwithstanding the many changes to Industrial Relations since 1988, employers and unions have continued to seek to have employees classified and paid according to the skills they use rather than the narrow tasks they carry out.

This led to a significant realignment of what had been entrenched demarcations, based on very narrowly defined tasks that the industrial parties agreed were hampering the growth and productivity of the industry, and ushered in a sustained period of restructuring and productivity growth in the Australian manufacturing industry.

It was recognised early in the development of the Metal and Engineering Training Package qualifications, that some specific strategies needed to be embedded in the qualifications and competency standards to ensure that the industry aims of appropriately describing the performance of skills in a modern workplace organised around skills-based occupations could be met.

Many of the design features associated with the competency standards and qualifications that appear in subsequent iterations of the Training Package had their origins in the industrial and training reforms of the late 1980's and early 1990's. The complexities associated with competency-based classification and pay continue to play out in the modern Manufacturing and Engineering Training package to this day.

The MEM Training Package design features established in the late 1980's and 90's don't always sit comfortably with contemporary training package, delivery and assessment standards and the most recently endorsed changes contained in MEM Release 2 are a case in point.

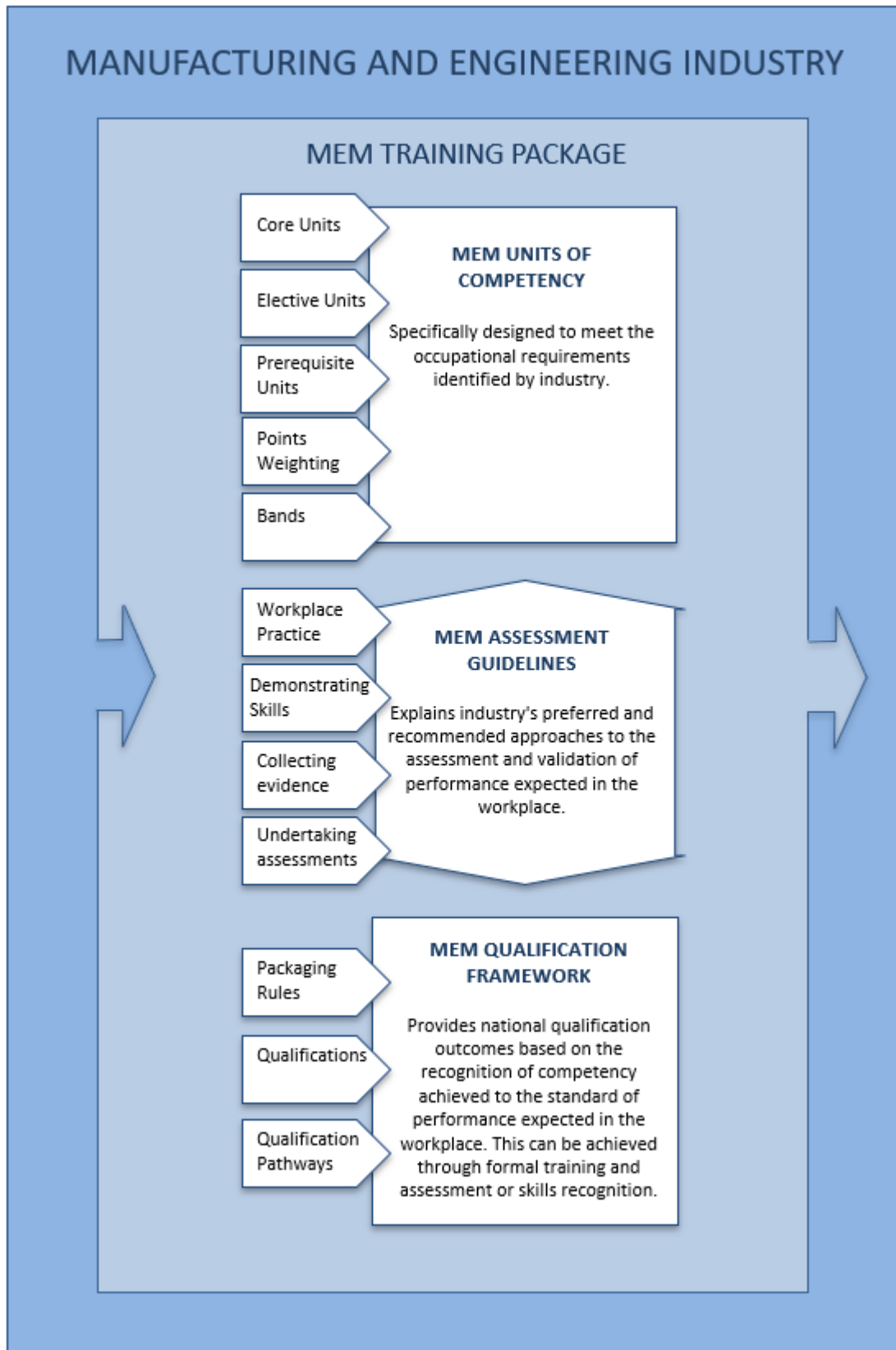
This Essentials Guide provides advice and additional context intended to support students, employers, training providers, assessors and others across the training system to navigate the MEM Training Package. In particular it features advice and information about aspects of the package that may differ from other training packages and courses. These features include:

- MEM units of competency
- Unit context and application
- Unit pre-requisites
- Unit weighting (points) and how the points system operates
- Groupings of units of competency (bands)
- Packaging rules

¹ *'Towards a New Metal and Engineering Industry Award' - Recommendation 3.23 (pp. 38–39), Commonwealth Department of Industrial Relations December 1988)*

- Qualification pathways and progression
- The role of workplace practice
- Demonstrating skills and collecting evidence
- Vet in Schools course selection.

MEM Training Package – Industry oversight and engagement



Units of competency

Consistent with all training packages, units of competency within the MEM training package are developed to meet the occupational requirements identified by industry. Each unit of competency identifies how skills and knowledge are applied to meet workplace performance requirements and includes:

- the knowledge and skills that underpin competency
- essential outcomes and performance criteria
- licensing, legislative or certification requirements
- band allocation that indicates the level and complexity of the unit and a measure of its industrial 'value'
- unit weightings that identify the relative value of the unit in relation to other units, form the basis for some qualification packaging rules and the unit's role in contributing to Award classifications levels
- language, literacy and numeracy requirements
- assessment conditions
- workplace health and safety requirements.

They are nationally endorsed standards for the consistent application of knowledge and skill to the standard of performance expected in the workplace. They describe how generic skills and knowledge apply to specific work outcomes. Units either stand alone or are combined with other units when applied in a work situation.

When used in the manufacturing and engineering industries they have functions that go beyond the standard against which training is delivered and assessed. They provide the basis for:

- recognition of skills within and across industries
- work organisation reviews and change management
- job design & redesign
- identification of skills gaps and training requirements
- determination of classification and pay
- workplace assessment
- certification
- credit transfer and articulation.

Each unit of competency describes:

- the skills and knowledge required to meet the requirements of specific work activities
- the conditions under which knowledge and skills may need to be applied
- the evidence that may need to be gathered in order to determine whether the skills and knowledge are being applied in a manner that meets the industry standard.

Units of competency - Core units

Qualifications contained in the MEM Training Package specify mandatory Core units. These units are considered central to the delivery of the capability, portability and transferability required to underpin performance of the skills represented by the qualification.

The Core units also serve the purpose of ensuring that the qualification is consistent with the key classification definitions contained in the industry Award and contribute to the considerations of the IRC in relation to AQF alignment of the qualification.

Core Units in MEM were originally designed to give effect to the then emerging debate around key competencies, at the same time as they described the skills required to underpin performance of many of the indicative tasks associated with work at various levels of complexity in manufacturing. They operate as much to meet the requirements of modern workplaces as they do to meet the needs of the Australian Qualifications Framework descriptors and characteristics.

From the early stages of MEM Training Package development, Core Units were designed to ensure underpinning competency in: Occupational Health and Safety (now known as Work Health & Safety), Measurement, Mathematics/Computations, Planning, Computer Applications, Training, Quality and Communication.

The approach to Core Units in Training Packages has changed over the last ten years or so and the MEM Training Package has gradually increased the number of Core Units, particularly in higher level qualifications, in order to ensure that key generic skills remain central to the training that students and apprentices receive and also to the growing capability demanded in modern workplaces.

Units of competency - Context and application

Individual units of competency are the building blocks of workplace capability, but it would be rare for a unit of competency to be applied in isolation in the workplace.

MEM units of competency are designed as generic competencies, but with an understanding that workplace application can differ significantly for the same competency depending on the nature of the work. They are developed to focus on the key capability across a range of potential applications in many possible contexts. Therefore, the context for their application should be built into training delivery strategies.

The approach to the construction of units of competency depends on the intended context for the application of the competency. In that regard it should be understood that work in Manufacturing and Engineering industries is generally divided into 3 'fields' of work: Production work, Trade work and Technical work.

In the case of Production and Trade related units of competency, the units are based on an industry expectation that competency is consolidated through a combination of formal learning and workplace practice in a relevant occupation. That has been the expectation since the first set of competency standards developed in the early 1990's. In the case of Technical work, the emphasis is more on scientific or engineering principles, knowledge and technique.

Context and application - an example

MEM12023 Perform engineering measurements has been developed to cover a range of measurements, a range of measurement equipment, in a large number of occupations and to accommodate a large number of circumstances. This unit is a key generic unit contained in a number of MEM qualifications from Certificate I to Advanced Diploma, but the application of this measurement unit in the qualifications will vary considerably depending on the work requirement, the measuring equipment to be used, the context of the workplace and the other competencies that are used in conjunction with it. ²

Scope

Despite units of competency potentially having a wide range of applications and contexts and covering a range of equipment or devices, it is not intended that a learner be assessed in every possible application, every instrument or in every circumstance indicated in the 'range' to be deemed competent in the unit. The information is included to communicate the scope of the unit and the range of potential applications that are covered by the unit. Advice and information

² See Appendix for comment regarding the evolution of the design elements of MEM Units of Competency. *MEM12023 Perform engineering measurements* is used for illustrative purposes.

is provided to inform Training Providers and to assist employers in work organisation and job design, and learners and workers seeking skills recognition or training and employment opportunities.

The alternative would be to produce a vast array of separate units covering each narrow application of measurement and/or the use of very specific measurement devices making qualification packaging and selection almost unworkable.

Changes to the Training Package Development Standards have complicated the interpretation of the range of conditions content in MEM units. The 'Range Statement' contained in the original MEM competency standards was a reflection of the possible methods, devices and applications that 'could' apply, rather than 'must' apply in order for a candidate to be assessed as competent.

The 'one size fits all' approach of training package regulators has compromised the intended flexibility, and the generic nature, of the units.

Continuing the measurement theme, it would be almost impossible to find an application of *MEM12023 Perform engineering measurements* that would require the use of the entire range of specifications, measuring devices, calculations, adjustments and measurements intended to be covered by the unit.

Assessments carried out against this unit should not be required to cover the entire Range of Conditions content, they should be contextualized to the relevant application required for the apprentice/student.

Units of competency - Pre-requisites

The MEM training package units of competency are built on a structure of accumulated skills and knowledge. This means that there are hierarchies of skills and knowledge built up from a range of competencies. This will have an impact on training and assessment delivery strategies.

Relationship of units

Units of competency are rarely applied in isolation. They are almost always used in combination with other units. For example, the unit *MEM05011 Assemble fabricated components* relies on a range of other skills including measurement, interpreting drawings, manual handling, heating and thermal cutting, welding, the use of hand and power tools, safety and mechanical cutting.

More often than not, competency in pre-requisite skills will be developed and accumulated concurrently, and as part of, the development and acquisition of the specific primary competency they underpin.

Specific skill requirements

In the MEM Training Package, any units of competency that underpin others are listed as pre-requisites. Unless indicated otherwise, the pre-requisite units count towards the achievement of the qualification requirements. MEM units listed as pre-requisites should be considered 'co-dependent' rather than literal pre-requisite units.

The pre-requisite units' section within a unit of competency indicates whether other specific competencies are required to support those competencies included in that particular unit.

The specification of units as pre-requisites is intended to indicate the reliance that each of the units shares with the other units. It is not an indication of a particular sequence in which they must be delivered or assessed.

Example

An apprentice undertaking a *Certificate III in Engineering - Fixed and Mobile Plant Mechanic* requires *MEM05007 Perform manual heating and thermal cutting*.

This Unit of Competency requires the following existing competencies to support skill development in the new unit:

- *MEM09002 Interpret technical drawing*
- *MEM11011 Undertake manual handling*
- *MEM12023 Perform engineering measurements*
- *MEM13015 Work safely and effectively in manufacturing and engineering*
- *MEM16006 Organise and communicate information.*

The specification of pre-requisites does not represent an indication of the 'order' or 'sequence' in which the units should be delivered or assessed. It simply indicates that the primary unit relies on the skills and knowledge contained in the pre-requisite units and the pre-requisite

units are required to underpin competency in the 'primary' unit. Otherwise the content of the pre-requisite units would have to be repeated in the primary unit.

This use of pre-requisite units predates the establishment of Training Packages in 1998 and is an important method of maintaining the relationship with the classification standards contained in the Award and of avoiding duplication of content.

Assessors should approach assessment of units that contain co-dependent pre-requisites on the basis that the assessment of the primary unit should not be carried out unless the pre-requisite units are being assessed concurrently or have already been assessed.

Additional information

A full list of MEM units of competency and their pre-requisites and points weighting can be found in the *Manufacturing and Engineering Training Package - Companion Guide Volume 2*.

Units of competency - Points weighting

Many units of competency have an allocated weighting shown as 'unit weight'. This weighting is defined in 'points' and these points weightings are used in the packaging rules for some of the qualifications. The allocation of points weighting to units of competency is based on the value of the competency in terms of its application in the workplace.

How the points work

The units selected for a qualification must have a combined points value equal to the points value specified for the various components of the qualification. For example, a Mechanical Trade Qualification requires units of competency whose combined weighting points equal 96. The combined points total includes the points associated with any pre-requisite units involved. Points for any particular unit can only be counted once in each qualification. For example, if a unit is selected to be part of a qualification, and it is also a pre-requisite for another selected unit, then the points for that unit can only be counted once.

The points and the Manufacturing and Associated Industries and Occupations Award 2010

Job classifications under the Manufacturing and Associated Industries and Occupations Award 2010 (the Award) reflect the intention of industry to maintain a skills-based classification structure based on the relative value of the skills required to perform work.

The Award has two methods of describing the skill levels required for classification at particular levels of the classification structure. The first is a reference to a 'minimum training requirement' for relevant classification levels that can be met by individuals holding nationally recognised qualifications at each relevant level.

Secondly, the Award refers to the competency standards contained in the National Metal and Engineering Industry Competency Standards (NMEICS) Implementation Guide. This second method is designed to recognise the skills of workers, without formal qualifications, that have been developed through significant workplace practice.

Award classification levels

The *NMEICS Implementation Guide* is used to accurately determine the correct classification of employees or positions within the industrial award classification structure based on skills.

It does this through a hierarchy of award classification levels, commencing at the lowest level of C14 and rising to C2(b)³. Each classification level for trade and production work up to C5 has an allocated points value that reflects the value of the skills required for classification at that level.

³ Note: Classification level C1 describes Professional Engineers and Professional Scientists who have as a minimum, a degree qualification. These employees are now covered by the *Professional Employees Award 2010*

Classifications above C8 have an additional requirement based on units of competency determined by the industry to require a greater depth and/or complexity of knowledge and skill, and industrial value than those available at lower levels, from C14 to C8. This is expressed as a unit 'Band' which is discussed later in this Guide.

Classification level 10 (C10) is taken as a benchmark and is commonly associated with base trades workers, such as fitters, machinists, fabricators and electrical trades and aligns with AQF Certificate Level III qualifications in the MEM training package. The points required for classification levels below C10 are lower and those above require a greater number of points.

There is a direct correlation between the points weighting requirements for classification and the points weighting requirements for qualifications.

For Example

Classification	Title	Competency points	Qualification	Award Pay Relativity to C10#
C11	Engineering/ Manufacturing Employee - Level IV	64 points (incl Core)	Certificate II in Engineering Production Technology 64 points (incl Core)	92.4%
C10	Engineering Tradesperson (Stream) Level 1	96 points (incl Core)	Certificate III in Engineering (Stream) Trade 96 points (incl Core)	100%
C7	Engineering Tradesperson - Special Class Level II	C10 + 36 Points*	Certificate IV in Engineering 132 points (incl Core)	115%

*Must include at least 12 points from a Unit 'Band' higher than A Band

#Nominal Relativity

Allocation of unit points weighting

The following statement, drawn from the *NMEICS Implementation Guide*, establishes the principal used in setting unit points weightings:

Not all skills are equally complex, so not each competency unit is treated as if it represents an equal amount of competence. The competency standards assign a number of points to each competency unit to indicate its relative weighting, or unit weight.

In assigning points to each competency unit, the stakeholders took in to account several factors, including:

- The amount of formal and on-the-job training needed to demonstrate competency in the skill required
- The amount of background knowledge and experience needed
- The complexity of the skill.

These factors are viewed in the light of other information such as:

- Points allocated to similar units of competency
- The relative level/s at which the unit will be used
- The type of work where the unit is used
- The intended context for the application of the skill.

A further consideration used is the relative value of the work as may be defined at a particular award classification level.

Relationship between points weighting and nominal hours

Notwithstanding a common belief that exists in the VET sector that the points allocated to units of competency are a measure of the nominal hours associated with training delivery, that belief is not correct.

Whilst the points structure in the initial set of competency standards in the early 1990's was designed to ensure some consistency with the initial National Metal & Engineering Curriculum and included consideration of the nominal hours of delivery associated with the curriculum, that's where the formal alignment ended.

Since then, there has been no direct correlation between the decision to allocate a certain points value to a unit and the nominal duration of training to meet that standard. As stated above, units of competency in MEM are designed on the assumption that they can be achieved in many ways, including, but certainly not limited to formal training delivery.

The points allocated to units are a reflection of the relative value that industry assigns to the unit and forms the basis for packaging units in certain MEM qualifications.

Units of competency - Bands

Units of competency within the MEM training package are allocated to 'Bands' that recognise the relative level of difficulty or complexity of skills used in the industry. Band B units generally represent skills and experience with more depth and complexity than Band A units. The large number of units in each band, however, still allows workplaces, employees and students an extensive choice from a wide range of competencies.

Career and classification advancement

Bands are used to categorise appropriate units of competency based on their relative depth and/or complexity and also for purposes of pay and career advancement. For example, the Band A range of competencies may be used for career progression up to Award classification C8; the Band B range of competencies may be used for progression between classifications C10 to C5. The Band each unit is allocated to, operates as a de facto limit on the level of the classification structure of the Award the unit can be used to achieve in terms of classification and pay.

There are similar requirements that apply to qualifications in the Technical Field, although the units in these qualifications are not based on points totals.

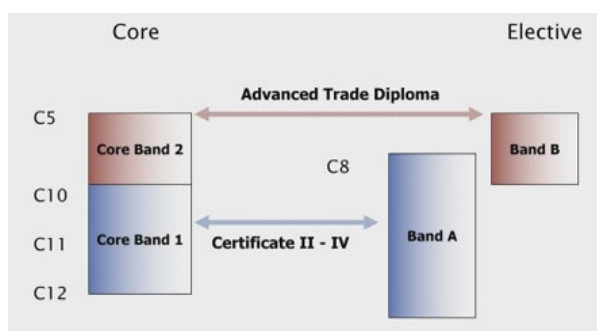
Higher classification levels

Banding is identified in both the individual unit and is reflected in the unit Group it is allocated in qualifications. This requires users to select appropriate units from the respective groups to properly reflect the depth and complexity required to maintain consistency with both the Training Package qualifications, the AQF and the Award classification structure.

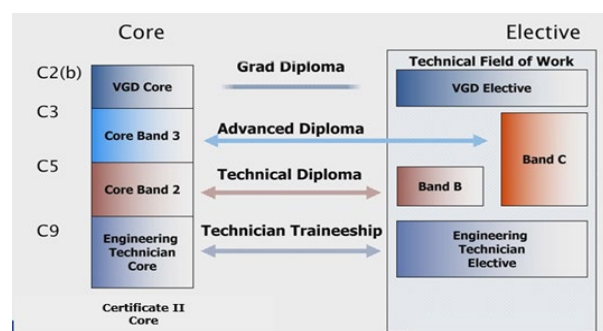
Flexibility

A small number of units are designated as both Band A and Band B units. This is to provide for additional flexibility in the application of the competency standards. Use of these dual Band units is limited and is identified in the units themselves by way of a note.

Structure - Trade/Production



Structure - Technical



Points weighting and qualification packaging rules

Release 2 of the MEM training package includes qualifications ranging from Certificate I to Diploma of Engineering - Advanced Trade. Of these, trade and production related qualifications use points weightings as the basis of their packaging rules.

A points weighting is assigned to each MEM unit of competency where the unit is allocated to a qualification with packaging rules that rely on point's weightings.

Unit selection

Relevant units of competency must be selected according to the packaging rules so that the total number of points required for the qualification is achieved. This is important to ensure that the packaging rules for qualifications in the Training Package reflect the relative skill requirements of the industry and the value that the industry places on the respective skill levels.

Examples of how points weightings fit into the packaging rules are shown below in the packaging rules for two of the MEM training package qualifications.

Sample Packaging rules

Certificate III in Engineering - Fabrication Trade

To be awarded the Certificate III in Engineering - Fabrication Trade, units of competency to the value of 96 points must be achieved. Units must be chosen as outlined below:

- All core units of competency (totalling 33 points)
- Elective units of competency to a minimum value of 40 points from one of either Group A, B, C, D, E, F or G
- Elective units of competency to a maximum value of 23 points from Group H electives to bring the total value to 96 points.

Certificate IV in Engineering (direct entry)

To be awarded the Certificate IV in Engineering, units of competency to a minimum value of 132 points must be achieved. Units must be chosen as outlined below:

- All core units of competency listed below (totalling 33 points)
- Elective units of competency to a minimum value of 12 points from Group A
- Elective units of competency to a maximum value of 87 points from Group B to bring the total value to 132 points.

Note:

Units in Groups B - G in the Certificate III in Engineering - Fabrication Trade are units associated with specific trade outcomes as indicated below:

B = Boilermaking

C = Welding

D = Boilermaking/Welding

E = Sheetmetal working

F = Blacksmithing

G = Surface Finishing

These groupings are important where the graduate is seeking to be eligible for a specific trade calling/Trade Paper.

Groups A and H in the Certificate III in Engineering - Fabrication Trade are associated with a generic qualification that does not equate to a specific trade specialisation or calling.

Additional information

A full list of MEM units of competency and their points weighting can be found in the *Manufacturing and Engineering Training Package - Companion Guide*.

Gaining Qualifications

There are many ways in which a person can gain a national qualification. Existing employees, trainees, apprentices, mature aged learners or pre-employment students may obtain qualifications through workplace practice and experience, formal training or a combination of both. The achievement of competence is what matters, not the way in which it is achieved.

Skills recognition, including apprenticeships and traineeships

The MEM training package provides national qualification outcomes based on recognition of competency achievement. In the case of trade qualifications, industry believes that these qualifications must be delivered through apprenticeship under a Training Contract.

These qualifications, while best suited for delivery through Training Contract arrangements, may also be achieved through recognition of prior learning that does not involve a contract of training. This is particularly important for those who historically had no access to formal training, but whose significant workplace practice and experience has resulted in them developing significant equivalent capabilities through work.

In all cases, achievement or recognition of competence is necessary in all of the required units of competency to be awarded a national qualification.

Upskilling, cross-skilling and skills transfer

All qualifications in the MEM training package are designed with a significant consideration for upskilling, cross-skilling and skills transfer into and from related occupations. This was an important feature of the original design model to encourage flexibility in the use of skills and the reduction in unnecessary demarcations.

Every MEM training package qualification articulates into higher AQF level qualifications and contain units that are also in the other qualifications. Individuals can readily transfer between related occupations, cross-skill between related occupations and upskill to higher AQF level qualifications.

Possible methods permitted by the respective qualifications may include:

- Assessment only pathway
- Combination of on-the-job and formal training delivery
- Formal training programs
- On-the-job training and/or workplace practice (work integrated learning).

Contextualisation of qualifications

All qualifications in the MEM training package have the capacity to be contextualised to suit the needs of workplaces and learners. Flexibility in the selection of units of competency is included in the training package to enable qualifications to be customised to meet the needs of both the learner and the workplace.

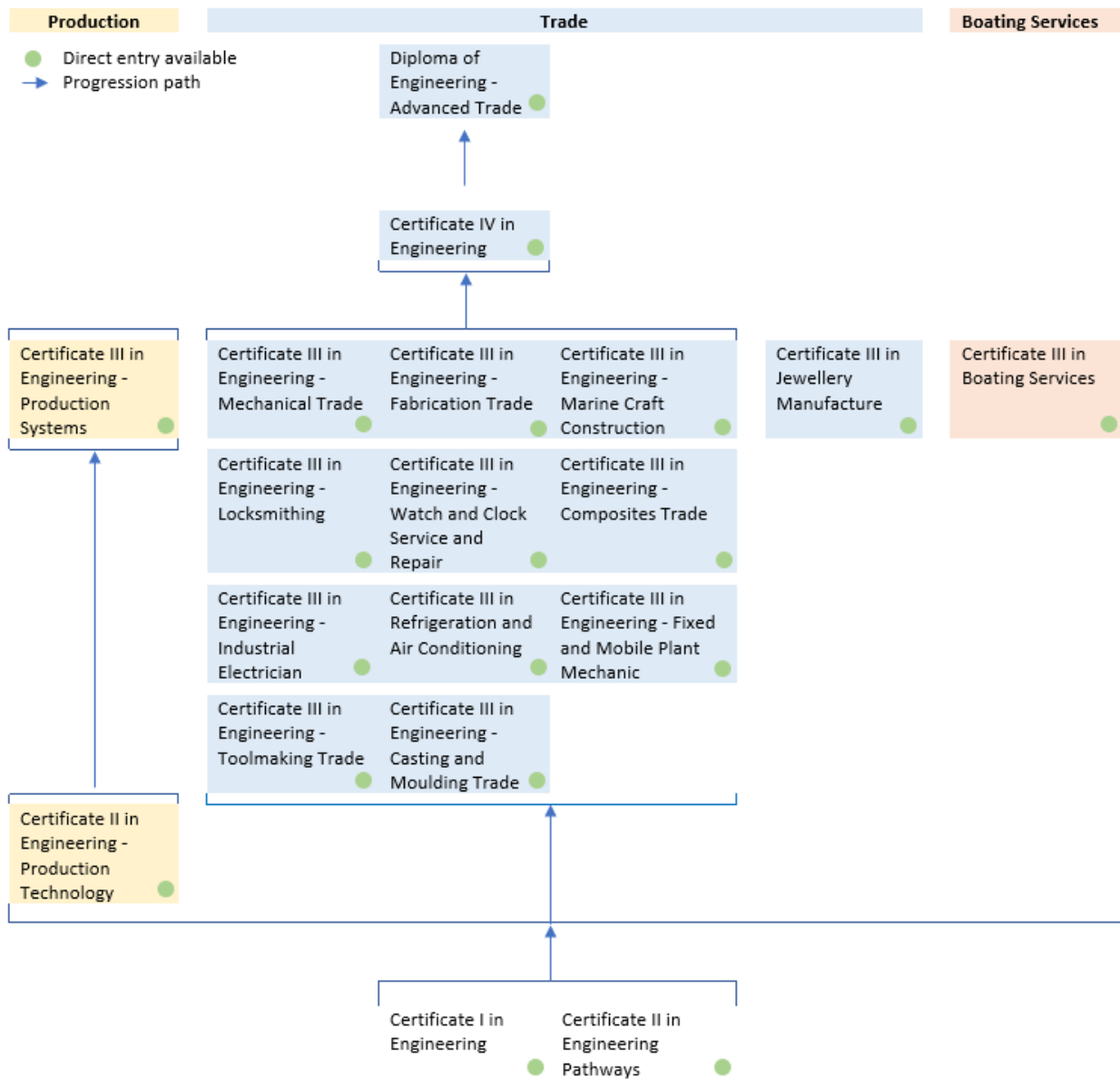
Sample qualification pathway to achieve the Certificate IV in Engineering

The minimum requirements for this qualification can be met by holders of one of the following qualifications with the completion of additional units of competency drawn from:

Engineering/Manufacturing Tradesperson - Special Class Level II:

- Group A elective units to a minimum value of 12 points and units
- Group B to bring the total value of additional units to 36 points (note that additional units are those units not included in the Certificate III qualification already held):
 - MEM30219 Certificate III in Engineering - Mechanical Trade
 - MEM30319 Certificate III in Engineering - Fabrication Trade
 - MEM30719 Certificate III in Marine Craft Construction
 - MEM30819 Certificate III in Locksmithing
 - MEM31019 Certificate III in Watch and Clock Service and Repair
 - MEM31219 Certificate III in Engineering - Industrial Electrician
 - MEM31319 Certificate III in Refrigeration and Air Conditioning
 - MEM31419 Certificate III in Engineering - Fixed and Mobile Plant Mechanic
 - MEM31519 Certificate III in Engineering - Toolmaking Trade
 - MEM31719 Certificate III in Engineering - Casting and Moulding Trade.

MEM Career Pathways - a snapshot



Workplace practice

Where formal training is required, competence should be achieved through a combination of on and off the job skills and knowledge development. All MEM qualifications are competency based and can be achieved through a formal skills recognition process where substantial workplace practice is evidenced.

It is the clear intention of industry that the skills specified in the competency standards are to be met in the context of their application in the workplace and 'to the standard expected in employment'. This is in response to long-held industry concerns including:

- poor or inconsistent training and assessment outcomes for learners
- varying levels of experience gained in a workplace context
- a lack of exposure to 'real' workplaces provided by some RTOs
- a lack of opportunities for training providers, employers and industry to properly recognise skills and competencies acquired and applied in the workplace.

There is significant risk, in cases where learners are not gaining competencies in the context of the workplace, that their performance will be compromised. This can result in a loss of productivity and quality and lead to the potential loss of confidence in vocational education and training outcomes as well as long term costs to industry, and the workplace safety of learners, workers and clients.

An integrated employment and learning model, such as that experienced in an apprenticeship, facilitates the consolidation of competency through the integration of employment-based work practice and formal learning associated with the qualification specified in the training contract.

Training Package Development policy does not generally permit Industry Reference Committees to mandate the use of a particular training methodology, such as an apprenticeship or traineeship, for qualifications they develop.

The MEM IRC, in response to concerns about declining quality of trade training outcomes, and in consultation with industry representatives, requested, and was granted, an exemption from those standards that has permitted the IRC to mandate the use of a Training Contract for the delivery of certain specified engineering trade qualifications. The requirement for a training contract will ensure workplace practice continues to be a fundamental requirement of engineering trade qualifications.

Workplace practice is critical in ensuring that the learner is afforded the opportunity to build their competency through practice. It gives industry confidence that the learner is developing the capability they need to demonstrate they can meet the standard of performance required in the trade.

Consolidation of learning - the learner

The workplace practice component of an apprenticeship is intended to consolidate and complement the formal 'off the job' learning of the apprentice resulting in competency 'to the standard expected in employment'.

It forms part of the process of learning, it is literally 'practicing' the skills of the trade. This includes practicing the skills, consolidating expertise and consistency, building confidence, learning from practice.

It provides the learner with opportunities to learn and develop new skills and to practice skills over a period of time in a functioning workplace, in a range of applications and contexts with experienced workers and with real world technologies, equipment, processes and procedures and the challenges that arise in real work environments.

Workplace practice allows a learner's specific skill acquisition and development to be focused, integrated and refined, and builds industry confidence that subsequent assessments of competency are valid, sufficient, current and authentic.

There is also the opportunity for learners to associate with and learn from the existing skilled workforce. Apart from the structured and formal learning that occurs, there are informal learning opportunities that present in the workplace, including the ability to ask questions as they arise and over time, the development of interpersonal skills and appropriate workplace behaviours, exposure to the unplanned, problem solving and knowledge sharing and mentoring.

Consolidation of training and practice - the Training Provider

Opportunities for structured workplace practice encourage training providers to develop stronger professional relationships with their student, industry and employers, improve the likelihood of learning and assessment methodologies more effectively suiting the needs of both learners and individual employers and the industry.

This in turn helps to better align and focus 'classroom' training and assessment to current industry practices and to tailor site visits and the collection of evidence of competency specifically to the learner, the employer, and the contexts in which the learning is taking place.

There is also the opportunity to engage with industry and employers over time and work with them to improve their understanding and appreciation of the VET system, inform better institutional practice and improve outcomes for learners in the workplace.

Ensuring that a learner has spent sufficient time acquiring and practicing critical skill areas in the workplace means that training providers can better monitor and guide skill and knowledge acquisition. Training providers can be confident that a qualified tradesperson has the skills and knowledge required by industry and the community.

A more productive and safer workplace - the Employer

Structured workplace practice provide an opportunity for employers to critically observe and participate in the development and acquisition of essential skills, knowledge and behaviours over time and strengthen those skills or elements that need to improve.

The employer is also provided the opportunity to have more influence over the quality of training outcomes of learners under their supervision and directly monitor quality, consistency and safety while ensuring that the overall skills and competencies of the workforce meet the expectations and demands of industry and community.

It can also facilitate the consolidation of skills, competencies and work practices of existing workers, particularly as they relate to management, supervision, mentoring, shared workplace safety responsibilities and the potential for ongoing staff development.

Confidence in the industry - The Community

A well trained workforce that has gained skills and competencies that were acquired, practiced and validated in the context of real work situations over time provides the community and industry with confidence that people with VET qualifications will have the skills and knowledge to competently perform their job role as well as being better prepared for the future.

There will also be confidence that critical products, services and infrastructure will be developed and maintained to required quality standards.

Collecting evidence of workplace practice

Assessment is best undertaken in a functioning workplace. Where specified in the assessment conditions of units of competency, it must be undertaken in a functioning workplace.

While an assessor is not present the whole time a learner is in the workplace, they do however, need to be satisfied that a learner has had sufficient workplace practice associated with the skills to support an assessment of competency. ‘

Evidence associated with workplace practice could include one or more of the following supplementary forms of evidence:

From the learner:

- work diaries and log books
- training contracts
- electronic journals
- portfolios of work
- a combination of the above.

From the employer:

- reports from supervisors, colleagues and/or clients
- testimonials
- workplace documentation
- work orders
- work contracts
- a combination of the above.

Note:

If a training provider has decided to involve those working with the learner to assist in the collection of evidence, it is important to remember that those assisting are not making any assessment decisions, nor are they involved in a co-assessment arrangement. They are simply collecting evidence because, given their proximity to the student, they can regularly observe the apprentice in a real workplace setting.

Strategies for collecting evidence of workplace practice⁴

When researching and developing strategies for collecting evidence of workplace practice, it is critical that training providers consult with industry, employers and their students to ensure that the collection of evidence and assessment aligns to current industry methods, workplace conditions, relevant technologies and products, and performance expectations.

It is important to consider:

- What 'evidence collecting tools' are available to training providers
- The learner's role in the workplace
- Who will collect the evidence and how the evidence will be collected, recorded and kept
- What information/materials will be required by the employer/supervisor/learner to facilitate the collection of evidence.

Collecting evidence of workplace practice in rural, remote and other locations where travel times mitigate against standards assessment and evidence gathering methodologies

Collecting assessment evidence in rural and remote locations, as well as other locations where travel times are prohibitive has always posed particular challenges for training providers. Site access, travel times and cost can mean that regular visits to the workplace are difficult at best. However, it is important to remember that learners in these locations should receive the same level of support, guidance and access to information as others.

To ensure fairness in the assessment process, training providers will need to explore a range of strategies to ensure that valid decisions about rural and remote workplace practice are made. In addition to using other parties to assist with evidence collection, the use of technology can be a practical way of allowing assessors to maintain contact with those learners.

Telecommunication applications such as Skype, FaceTime and YouTube have features that allow instant messaging, video chat and voice chat. Content sharing applications allow the uploading or live streaming of recordings, enabling the learner to provide evidence of, and an assessor to observe and validate, workplace practice. Emails and texts messaging can also be used to share files and other supplementary evidence.

A range of strategies for collecting evidence can be found in the next section: Demonstrating skills and collecting evidence.

⁴ *Guide to developing assessment tools - Australian Skills Quality Authority (ASQA) website. Viewed 5 December 2019*

Demonstrating skills and collecting evidence

To inform a judgement about whether a learner has achieved competency, an RTO must gather and validate a range of evidence of the learner's competence and compliance with training package requirements. This evidence may be gathered from a variety of sources in accordance with the RTO's strategies for training and assessment.

To best ensure that the quality of all evidence collected accurately reflects a learner's ability to perform to the standard expected in the workplace, the MEM IRC has determined that a learner must be able to demonstrate the skills included in the Unit of Competency on more than one occasion.

Reinforcing evidence collection guidelines

This determination is not intended to place additional burdens on the assessment responsibilities of RTOs. Instead, it is intended to reinforce collection of evidence guidance provided by ASQA and to strengthen the requirement for RTOs to ensure that the evidence of competency that is collected meets the rules of evidence of validity, sufficiency, currency and authenticity.

Range of evidence

It is not anticipated that this requirement will always require an assessor to observe each demonstration of a learner's skill, instead, an assessor should draw on the full range of evidence available to them to determine that a learner has been able to demonstrate the skills included in the Unit of Competency on more than one occasion.

Forms of evidence

Evidence can be categorised as direct, indirect or supplementary evidence:

1. **Direct evidence** is evidence that can be observed or witnessed by the assessor. This could include:
 - discussions and questioning
 - observing activities in the workplace
 - teleconferencing and/or video conferencing
 - instant messaging, email and similar technologies
 - demonstration
 - project centred assessment
 - photographs, videos and recordings of tasks being undertaken and completed
 - a combination of the above.
2. **Indirect evidence is evidence of a candidate's work that can be reviewed or examined by the assessor.** This could include:
 - completed products
 - written assignments or knowledge checking
 - an annotated portfolio of previous work performed
 - a combination of the above.
3. **Supplementary evidence is additional evidence presented to assessors to support a candidate's claim of competence.** This could include:

- reports from supervisors, colleagues and/or clients
- testimonials from employers
- workplace documentation
- work diaries and log books
- training contracts
- work orders
- electronic journals or other technology-based evidence gathering tools
- a combination of the above.

Collecting evidence - Planning

To ensure that the selection of evidence to be collected reliably and sufficiently encompasses the competencies being undertaken by a learner, and authentically reflect the learner's workplace practice, it is important for an RTO to refer to the learner's formal training and assessment plan. This will ensure consistency between the provision of training, workplace practice and assessment of competency, and accurately reflect the learner's ability to perform to the standard expected in the workplace.

Collecting evidence - Involving others

Involving another party such as a supervisor, colleague or client enables assessors to gather evidence that is valid, sufficient, current and authentic and is a legitimate strategy for collecting evidence of the demonstration of skills in the workplace and meeting workplace practice requirements. If this type of evidence collection is considered, it is important that an RTO or assessor first determine that it is appropriate to involve another party in the collection of evidence and that it will lead to the collection of quality, reliable and valid evidence.

This strategy might be employed to augment a demonstration of skill carried out as part of a formal assessment process.

Involving others - An example

Sprocket Training Pty Ltd is delivering the *MEM30219 Certificate III in Engineering - Mechanical Trade* to a group of apprentices in remote South Australia. While the training provider makes scheduled workplace visits and has regular catch-ups with the apprentices over Skype, it is decided to involve a workplace supervisor as part of the evidence collection strategy to ensure skill development is observed consistently and over time.

To ensure that the apprentices can demonstrate specific skills in a functioning workplace, such as a machine shop (e.g. *MEM07013 Performing machining operations using horizontal and vertical boring machines*) on more than one occasion, the training provider arranges with an on-site Mechanical Engineering Supervisor to collect evidence that the apprentice has had ample workplace practice in tasks associated with the skills required by the units selected. The supervisor is not making any assessment decisions, nor are they involved in a co-assessment arrangement. They are simply collecting evidence because they can regularly observe the apprentice in a real workplace setting.

The RTO develops a Supervisor's Guide that explains to the supervisor what their role is. The Guide includes information on the tasks that must be performed by the apprentice in order to satisfy the workplace practice requirements of the unit/s, as well as when and what the supervisor should observe and over what period.

The RTO also provides an observation checklist for each task, with clear instructions to the supervisor on the task and performance expectations. The checklists include specific observable behaviours that the supervisor can comment on, with additional space for free commentary along with the apprentice and supervisor signatures.

The RTO verifies and validates the authenticity of this evidence with an interview with the supervisor once all tasks are completed and the checklists collected.⁵

Collecting evidence - Grouping units of competency

Relevant units of competency can be grouped together for training and assessment purposes, to reflect a workplace role, to encompass a particular workplace task, or to meet the specific needs of the workplace.

A learner can demonstrate competency and meet the workplace practice requirements for multiple units of competency at the same time, particularly when the competencies are linked by process or are co-dependent, for example pre-requisite units.

Grouping units together for assessment purposes requires a clear understanding of the individual competencies to be assessed and an assessment methodology that facilitates the identification of evidence that can be reliably used to determine competency across the grouped units. This is best undertaken when the assessor, learner and employer have identified units of competency that are consistent with a specific task, process or assigned function that can effectively be used to assess those competencies or elements concurrently.

When grouping units together for assessment, assessors, learner and employer should consider links or commonalities between units including:

- elements and performance criteria
- foundation skills
- evidence requirements
- assessment conditions

Grouping units of competency - An example

Sparks Training Pty Ltd is delivering the *MEM30319 - Certificate III in Engineering - Fabrication Trade* to an apprentice.

⁵ Adapted from: *Using other parties to collect assessment evidence* - Australian Skills Quality Authority (ASQA)

After consulting the employer and the apprentice, the RTO has determined that evidence of workplace practice associated with some units can be collected as the apprentice undertakes regular tasks in the workplace. The training provider has grouped the following five units together as they share commonalities, can be linked by task and job function, share some consistent pre-requisites, and evidence of workplace practice can easily be recorded and validated.

- *MEM05015 Weld using manual metal arc welding process*
- *MEM05016 Perform advanced welding using manual metal arc welding process*
- *MEM05036 Repair/replace/modify fabrications*
- *MEM05051 Select welding processes*
- *MEM05052 Apply safe welding processes*

While the assessor visits the apprentice on a number of occasions to conduct observation assessments and knowledge testing, and the apprentice has compiled a log book of workplace practice they have undertaken, the RTO, in consultation with the employer and the apprentice, decides to supplement this evidence with evidence from the employer.

The employer is asked to complete agreed periodic reports, which includes evidence that relates to work performed by the student in that period that is relevant to the units.

When meeting with the employer, the assessor reviews the report, and clarifies records where insufficient or unclear information is provided. The assessor may also ask additional questions of the apprentice to clarify any information in the evidence collected and ensure that all evidence collected can be confirmed by the RTO.

The RTO keeps copies of the employer's reports, any other evidence along with the candidate's log book, and the completed assessor records. All items are scanned and saved into electronic format.⁶

Considerations when selecting forms of evidence

Consideration should be given to selecting forms of evidence that can be used to illustrate competency across a number of units. Competencies that are linked by process or are co-dependent (pre-requisites) do not need to be reassessed once the learner has been deemed competent, provided that assessment requirements are met for all units in the cluster.

As stated above, workplace practice is designed to ensure that the learner is afforded the opportunity to build their competency through practice.

Evidence collecting tools

Evidence Collecting Tools are used to record and collate the evidence that will be used by a training provider to determine that a learner has consistently applied the knowledge and skills required in a Unit of Competency, to the standard of performance required in the workplace.

⁶ Adapted from: *Using other parties to collect assessment evidence* – Australian Skills Quality Authority (ASQA)

Evidence Collecting Tools should be able to be used by all stakeholders; learners, trainers, assessors and employers/supervisors, to record and collate a range of evidence forms that will result in quality decisions and assessments being made by training providers.

It is important for Training Providers to understand the capacity of the *Evidence Gathering Tools* they use and adapt the tools to meet their requirements and the workplace contexts in which the tools will be used.

Note:

The development and use of Evidence Collecting Tools and assessment tools must meet the requirements of the Standards for Registered Training Organisations (RTOs) 2015.⁷

⁷ *Guide to developing assessment tools* - Australian Skills Quality Authority (ASQA) website. Viewed 5 December 2019

VET in Schools and course selection

All MEM qualifications are competency based and can be achieved through a formal skills recognition process where substantial industry experience is evident. Where formal training is required, competence will be realised through a combination of on and off the job skills and knowledge development. Industry has mandated that specified engineering trade qualifications included in the MEM training package must be undertaken through a Training Contract associated with an Australian Trade Apprenticeship or through formal skills recognition.

Appropriate course selection

Statements in each qualification contain critical information about the intended purpose of the qualification. These statements are necessary to ensure that the occupational outcome associated with the qualifications meets the industry definitions for the respective trades/vocations as contained in the Award, and that the qualifications are used only for their intended purpose.

Where students are enrolled in a VET in Schools program, they should be directed to MEM10119 Certificate I in Engineering or MEM20413 Certificate II in Engineering Pathways qualifications which were specifically designed to underpin Vet in Schools and pre-employment or pre-apprenticeship training and skills development.

Certificate III Trade qualifications and Certificate II and III Production qualifications

The use of Certificate III Trade qualifications and Certificate II and III Production qualifications as either VET in Schools programs or school-based fully institutional programs is inappropriate and it is the clear intention of industry that these qualifications not be delivered to school students outside an apprenticeship/traineeship respectively, or formal skills recognition process. These qualifications have been designed to meet the needs of skilled trade workers, or manufacturing/production workers respectively employed in sophisticated manufacturing environments.

In particular, the MEM20105 Certificate II in Engineering was developed specifically to meet the needs of a C12 - Engineering/manufacturing employee - level III in the Manufacturing & Associated industries & Occupational Award 2010 ([MA000010](#)).

It is not, nor has it ever been, suitable for delivery as a pre-apprenticeship, pre-employment or VET in Schools program. The application statement for the qualification specifically states:

” ...

This qualification is not suited and should not be used for people who are not employed in an engineering production or manufacturing environment. It is not suited and should not be used for school students unless they are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

...”

The use of this qualification outside its intended purpose has significant industrial implications given the qualification was constructed to meet the pay and classification definitions of the Award and would entitle a holder of the qualification to a higher rate of pay if they were to enter an apprenticeship.

Formal learning activities

The amount of training provided by an RTO relates primarily to formal learning activities (including classes and other activities, as well as structured workplace learning).

RTOs must consider the need to allow students to reflect on and absorb knowledge, to practice the skills in different contexts, and to learn to apply the skills and knowledge in the varied environments of workplaces before being assessed.

Where the student is an apprentice, the RTO must also meet the requirements of the Training Plan agreed to between the apprentice and the employer.

Appendix: Units of Competency - Changing design

MEM12023A Perform engineering measurements: Changing design

Because of its generic suitability, the previous version of *MEM12023A Perform engineering measurements* was included in 95 training packages across a vast array of industry and occupational applications.

First published in MEM98 (2.5C11 Measure with graduated devices), the original version of the unit was developed to cover the skill associated with measurement in one or more of following range of measuring contexts and devices:

“Range statement

Work undertaken autonomously or part of team environment. Work undertaken in field, work station, workshops. This unit covers measurement skills requiring straightforward application of the measuring device and may utilise the full range of graduations of measuring device. Examples may include measurements using verniers, feeler gauges, micrometers, dial indicators, thermometers, and similar graduated devices. Measurements undertaken may include: length, squareness, flatness, angle, roundness, clearances or any other measurements that can be read off analog, digital or other graduated device. Electrical/electronic devices used are those not requiring the connection or disconnection of circuitry. Measurements may include metric and imperial measurement. All measurements undertaken to standard operating procedures. Adjustment of measuring devices is through external means and includes zero and linear adjustment. For straightforward use of comparison or basic measuring devices Unit 12.1A (Use comparison and basic measuring devices) should be accessed.”⁸

The current version covers the same range, albeit in a form that meets the standard format introduced as part of the 2012 Training Package Development Standards.

The changes to Training Package Development Standards over the last 20 years have affected some of the foundational design elements introduced into the MEM Training Package more than 20 years ago. The ‘Range Statement’ information contained in units such as MEM12023, necessary, as it is to meet the requirements of industry, for example, does not sit comfortably with the latest changes to Training Package standards.

⁸ Range Statement: Unit 2.5C11 Measure with graduated devices MEM98