

## 4 Assessment

### 4.1 Industry Curriculum Frameworks – The Purposes of Assessment

Assessment for Higher School Certificate VET courses within industry curriculum frameworks has two distinct purposes:

1. Assessment for Australian Qualifications Framework (AQF) VET qualifications. This is competency-based assessment which:
  - applies to all courses within frameworks
  - provides industry recognition.
2. Assessment for the Universities Admissions Index (UAI):
  - for 240-hour courses only
  - written HSC examination<sup>3</sup>.

### 4.2 Assessment for AQF Qualifications

Assessment for AQF VET qualification:

- is competency-based
- must be reliable, flexible, fair and valid. Judgements are made on the basis of evidence, which may be in a variety of forms
- must be conducted by qualified assessors and be consistent with Training Package Assessment Guidelines
- assesses students as competent or not yet competent.

An integrated or holistic approach to competency-based assessment should be adopted.

#### 4.2.1 Guiding principles for assessment materials

The following information (pp 152-156) is reproduced from the *Assessment Guidelines* of the *Metal and Engineering Training Package (MEM05)*<sup>4</sup> incorporating the *AQTF Standards for RTOs*<sup>5</sup>.

##### 4.2.1.1 Australian Quality Training Framework Assessment Requirements

Assessment leading to nationally recognised AQF qualifications and Statements of Attainment in the vocational education and training sector must meet the requirements of the AQTF as expressed in the Standards for Registered Training Organisations.

The Standards for Registered Training Organisations can be downloaded from the DEST website at [www.dest.gov.au](http://www.dest.gov.au) or can be obtained in hard copy from DEST. The following points summarise the assessment requirements under the AQTF.

Note: The Functions of ANTA were subsumed into the Department of Education, Science and Training (DEST) from 30 June 2005.

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<sup>3</sup> Refer to Section 11.4 and 11.5 in Part A of the Syllabus.

<sup>4</sup> DEST, 2005, *Metal and Engineering Training Package (MEM05)*, Volume One, pp 120–125. The *Assessment Guidelines* of MEM05 may also be accessed via the National Training Information Service website ([www.ntis.gov.au](http://www.ntis.gov.au)).

<sup>5</sup> ANTA, 2005, *Australian Quality Training Framework Standards for RTOs*, Melbourne.

### **Registration of Training Organisations**

Assessment must be conducted by, or on behalf of, an RTO formally registered by a State or Territory Registering/Course Accrediting Body in accordance with the Standards for Registered Training Organisations. The RTO must have the specific units of competency and/or AQF qualifications on its scope of registration. See Section 1 of the Standards for Registered Training Organisations.

### **Quality Training and Assessment**

Each RTO must have systems in place to plan for and provide quality training and assessment across all its operations. See Standard 1 of the Standards for Registered Training Organisations.

### **Assessor Competency Requirements**

Each person involved in training, assessment or client service must be competent for the functions they perform. See Standard 7 of the Standards for Registered Training Organisations for assessor competency requirements. Standard 7 also specifies the competencies that must be held by trainers.

### **Assessment Requirements**

The RTO's assessments must meet the requirements of the endorsed components of Training Packages within its scope of registration. See Standard 8 of the Standards for Registered Training Organisations.

### **Assessment Strategies**

Each RTO must identify, negotiate, plan and implement appropriate learning and assessment strategies to meet the needs of each of its clients. See Standard 9 of the Standards for Registered Training Organisations.

### **Mutual Recognition**

Each RTO must recognise the AQF qualifications and Statements of Attainment issued by any other RTO. See Standard 5 of the Standards for Registered Training Organisations.

### **Access and Equity and Client Services**

Each RTO must apply access and equity principles, provide timely and appropriate information, advice and support services that assist clients to identify and achieve desired outcomes. This may include reasonable adjustment in assessment. See Standard 6 of the Standards for Registered Training Organisations.

### **Partnership Arrangements**

RTOs must have, and comply with, written agreements with each organisation providing training and/or assessment on its behalf. See Standard 1.6 of Standards for Registered Training Organisations.

### **Recording Assessment Outcomes**

Each RTO must have effective administration and records management procedures in place, and must record AQF qualifications and Statements of Attainment issued. See Standards 4 and 10.2 of the Standards for Registered Training Organisations.

### **Issuing AQF qualifications and Statement of Attainment**

Each RTO must issue AQF qualifications and Statements of Attainment that meet the requirements of the AQF Implementation Handbook and the endorsed Training Packages within the scope of its registration. An AQF qualification is issued once the full requirements for a qualification, as specified in the nationally endorsed Training Package are met. A Statement of Attainment is issued where the individual is assessed as competent against fewer units of competency than required for an AQF qualification. See Standard 10 and Section 2 of the Standards for Registered Training Organisations.

### Licensing/Registration Requirements

Specific licenses may be required in some jobs. The local regulations should be checked for details. The industry is generally subject to a range of regulatory control. These vary with the nature of the work and to some extent on its location as most regulations are State based and some are enforced by local government. This Training Package allows for these differences without mandating them to specific units of competency which would not be appropriate.

Selected units of competency and qualifications in this Training Package have been designed to satisfy or partly satisfy the licensing requirements of various industry sectors.

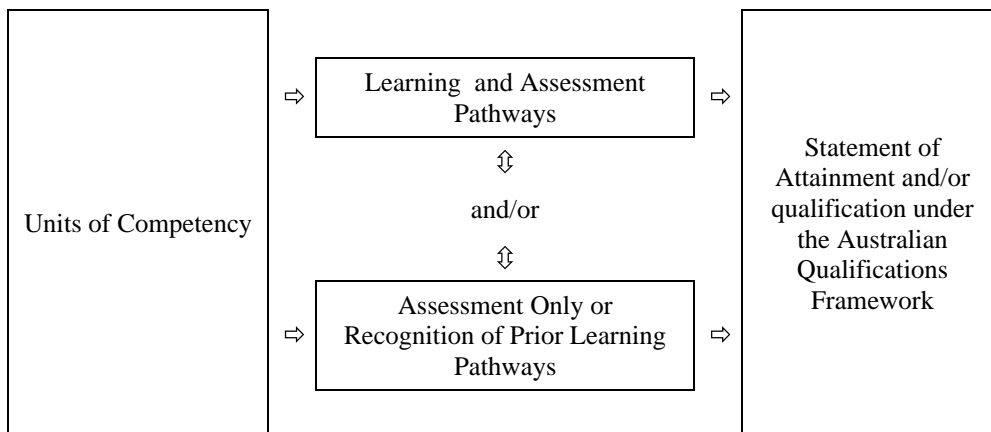
This Metal and Engineering Training Package publication provides advisory information based on MERS ITAB's discussions with representatives of industry and regulators. All possible care has been taken in the preparation of this material however persons should not rely solely on this publication in matters involving industry specific current or proposed licensing requirements or arrangements.

#### 4.2.1.2 Pathways

The competencies in this Training Package may be attained in a number of ways including through:

- formal or informal education and training
- experiences in the workplace
- general life experience, and/or
- any combination of the above.

Assessment under this Training Package leading to an AQF qualification or Statement of Attainment may follow a learning and assessment pathway, an assessment-only or recognition pathway, or a combination of the two as illustrated in the following diagram.



Each of these assessment pathways leads to full recognition of competencies held – the critical issue is that the candidate is competent, not how the competency was acquired.

Assessment, by any pathway, must comply with the assessment requirements set out in the *Standards for Registered Training Organisations*.

#### Learning and Assessment Pathways

Usually, learning and assessment are integrated, with assessment evidence being collected and feedback provided to the candidate at anytime throughout the learning and assessment process.

Learning and assessment pathways may include structured programs in a variety of contexts using a range of strategies to meet different learner needs. Structured learning and assessment programs could be: group-based, work-based, project-based, self-paced, action learning-

based; conducted by distance or e-learning; and/or involve practice and experience in the workplace.

Learning and assessment pathways to suit New Apprenticeships have a mix of formal structured training and structured workplace experience with formative assessment activities through which candidates can acquire and demonstrate skills and knowledge from the relevant units of competency.

### **Assessment-Only or Recognition of Prior Learning Pathway**

Competencies already held by individuals can be formally assessed against the units of competency in this Training Package, and should be recognised regardless of how, when or where they were achieved.

In an assessment-only or Recognition of Prior Learning (RPL) pathway, the candidate provides current, quality evidence of their competency against the relevant unit of competency. This process may be directed by the candidate and verified by the assessor, such as in the compilation of portfolios; or directed by the assessor, such as through observation of workplace performance and skills application, and oral and/or written assessment. Where the outcomes of this process indicate that the candidate is competent, structured training is not required. The RPL requirements of Standard 8.2 of the Standards for Registered Training Organisations must be met.

As with all assessment, the assessor must be confident that the evidence indicates that the candidate is currently competent against the endorsed unit of competency. This evidence may take a variety of forms and might include certification, references from past employers, testimonials from clients, and work samples. The onus is on candidates to provide sufficient evidence to satisfy assessors that they currently hold the relevant competencies. In judging evidence, the assessor must ensure that the evidence of prior learning is:

- authentic (the candidate's own work)
- valid (directly related to the current version of the relevant endorsed unit of competency)
- reliable (shows that the candidate consistently meets the endorsed unit of competency)
- current (reflects the candidate's current capacity to perform the aspect of the work covered by the endorsed unit of competency), and
- sufficient (covers the full range of elements in the relevant unit of competency and addresses the four dimensions of competency, namely task skills, task management skills, contingency management skills, and job/role environment skills).

The assessment only or recognition of prior learning pathway is likely to be most appropriate in the following scenarios:

- candidates enrolling in qualifications who want recognition for prior learning or current competencies
- existing workers
- individuals with overseas qualifications
- recent migrants with established work histories
- people returning to the workplace, and
- people with disabilities or injuries requiring a change in career.

### **Combination of Pathways**

Where candidates for assessment have gained competencies through work and life experience and gaps in their competence are identified, or where they require training in new areas, a combination of pathways may be appropriate.

In such situations, the candidate may undertake an initial assessment to determine their current competency. Once current competency is identified, a structured learning and assessment program ensures that the candidate acquires the required additional competencies identified as gaps.

#### 4.2.1.3 Assessor Requirements

This section identifies the mandatory competencies for assessors, and clarifies how others may contribute to the assessment process where one person alone does not hold all the required competencies.

##### Assessor competencies

The Standards for Registered Training Organisations specify mandatory competency requirements for assessors. For information, Standard 7.3 from the Standards for Registered Training Organisations follows:

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| <p>7.3 a The RTO must ensure that assessments are conducted by a person who has:</p> <ul style="list-style-type: none"><li>i the following competencies<sup>3</sup> from the Training and Assessment Training Package, or is able to demonstrate equivalent competencies:<ul style="list-style-type: none"><li>a TAAASS401A Plan and organise assessment;</li><li>b TAAASS402A Assess competence;</li><li>c TAAASS404A Participate in assessment validation; and</li></ul></li><li>ii relevant vocational competencies, at least to the level being assessed.</li></ul> <p>b However, if a person does not have all of the competencies in Standards 7.3 a (i) and 7.3 a (ii), one person with the competencies listed in Standard 7.3 a (i), and one or more persons who have the competencies listed in Standard 7.3 a (ii) may work together to conduct assessments.</p> |
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<sup>3</sup> A person who holds the competencies BSZ401A Plan assessment, BSZ402A Conduct assessment, and BSZ403A Review assessment from the Training Package for Assessment and Workplace Training will be accepted for the purposes of this standard. A person who has demonstrated equivalent competencies to BSZ401A and BSZ402A and BSZ403A in the period up to 12 months following publication of the Training and Assessment Training Package will also be accepted for the purposes of this standard.

It is important that assessors are familiar with the use of the Metal and Engineering Competency Standards and the agreed industrial processes for their implementation in workplaces. Manufacturing Skills Australia can provide a list of approved organisations that provide an Implementing Competency Standards Program that will assist assessors.

The following information is found in the assessment guidelines of other endorsed Training Packages and is also applicable for assessment within Metal and Engineering. This particular segment of information (pp 157-158) has been taken from the *Assessment Guidelines* of the *Information and Communications Technology Training Package (ICA05)*<sup>6</sup>.

### Options for meeting the requirement to use qualified assessors

The options listed below show how the requirement to use qualified assessors can be met.

Options	Assessors, Technical Experts, Workplace Supervisors and Assessment Teams
<p><b>Single Assessor</b></p> <p><b>An individual assessor conducts the assessment</b></p>	<p>An Assessor is:</p> <ul style="list-style-type: none"> <li>• required to hold formal recognition of competence in the relevant units in the Training and Assessment Training Package;</li> <li>• deemed competent and, where possible, holds formal recognition of competence in the specific units of competency in this Training Package, at least to the level being assessed.</li> </ul> <p>In addition, it is recommended that the assessor is able to:</p> <ul style="list-style-type: none"> <li>• demonstrate current knowledge of the industry, industry practices, and the job or role against which performance is being assessed;</li> <li>• demonstrate current knowledge and skill in assessing against this Training Package in a range of contexts; and</li> <li>• demonstrate the necessary interpersonal and communication skills required in the assessment process.</li> </ul>
<p><b>Partnership arrangement</b></p> <p><b>An assessor works with a technical expert to conduct the assessment</b></p>	<p>An Assessor is required to:</p> <ul style="list-style-type: none"> <li>• hold formal recognition of competence in the relevant units in the Training and Assessment Training Package.</li> </ul> <p>In addition, it is recommended that the assessor is able to:</p> <ul style="list-style-type: none"> <li>• demonstrate current knowledge and skill in assessing against this Training Package in a range of contexts; and</li> <li>• demonstrate the interpersonal and communication skills required in the assessment process.</li> </ul> <p>A technical expert shall be a person:</p> <ul style="list-style-type: none"> <li>• is deemed competent and, where possible, hold formal recognition of competence in the specific units of competency from this Training Package, at least to the level being assessed.</li> </ul> <p>In addition, it is recommended that the technical expert is able to:</p> <ul style="list-style-type: none"> <li>• demonstrate current knowledge of the industry, industry practices, and the job or role against which performance is being assessed;</li> <li>• communicate and liaise with the assessor throughout the assessment process.</li> </ul>

<sup>6</sup> DEST, 2005, *Information and Communications Technology Training Package (ICA05)*, Volume One, Section 1.5, pp 1-119 – 1-125.

Options	Assessors, Technical Experts, Workplace Supervisors and Assessment Teams
<p><b>Partnership arrangement</b></p> <p><b>An assessor works with workplace supervisor in collecting evidence for valid assessment</b></p>	<p>An assessor is required to:</p> <ul style="list-style-type: none"> <li>• hold formal recognition of competence in the relevant units in the Training and Assessment Training Package; and</li> <li>• make the assessment decisions.</li> </ul> <p>In addition, it is recommended that the assessor is able to:</p> <ul style="list-style-type: none"> <li>• demonstrate current knowledge and skill in assessing against this Training Package in a range of contexts;</li> <li>• demonstrate the interpersonal and communication skills required in the assessment process;</li> <li>• communicate and liaise, where appropriate, with the workplace supervisor throughout the assessment process.</li> </ul> <p>A workplace supervisor is required to:</p> <ul style="list-style-type: none"> <li>• be deemed competent and, where possible, is to hold formal recognition of competence in the specific units of competency from this Training Package, at least to the level being assessed.</li> </ul> <p>In addition, it is recommended that the workplace supervisor is able to:</p> <ul style="list-style-type: none"> <li>• demonstrate current knowledge of the industry, industry practices, and the job or role against which performance is being assessed;</li> <li>• communicate and liaise, where appropriate, with the assessor throughout the assessment process; and</li> </ul> <p>use agreed practices to gather and record evidence for the assessor to use in making a valid judgment on competency.</p>
<p><b>Assessment team/panel</b></p> <p><b>A team or panel working together to conduct the assessment</b></p>	<p>Members of an assessment team or panel that comprises assessment and industry experience and expertise works together in the collection of evidence and in making judgments about competency. The members of the team must include at least one person who:</p> <ul style="list-style-type: none"> <li>• holds formal recognition of competence in the relevant units of the Training and Assessment Training Package;</li> <li>• is deemed competent and, where possible, holds formal recognition of competence in the specific units of competency from this Training Package, at least to the level being assessed.</li> </ul> <p>In addition, it is recommended that members of the assessment team or panel involved in the assessment are able to:</p> <ul style="list-style-type: none"> <li>• demonstrate current knowledge of the industry, industry practices, and the job or role against which performance is being assessed;</li> <li>• demonstrate current knowledge and skill in assessing against this Training Package in a range of contexts;</li> <li>• demonstrate the interpersonal and communication skills required in the assessment process and liaise with other team/panel members throughout the assessment process.</li> </ul>

## 4.2.2 Principles for designing and conducting assessments

The following information (pp 159-161) is reproduced from the *Assessment Guidelines* of the *Metal and Engineering Training Package (MEM05)*<sup>7</sup>.

### 4.2.2.1 Designing Assessment Tools

This section provides an overview on the use and development of assessment tools.

#### Use of Assessment Tools

Assessment tools provide a means of collecting the evidence that assessors use in making judgements about whether candidates have achieved competency.

There is no set format or process for the design, production or development of assessment tools. Assessors may use prepared assessment tools, such as those specifically developed to support this Training Package, or they may develop their own.

#### Using Prepared Assessment Tools

If using prepared assessment tools, assessors should ensure these are benchmarked, or mapped, against the current version of the relevant unit of competency. This can be done by checking that the materials are listed on the National Training Information Service (<http://www.ntis.gov.au>). Materials on the list have been noted by the National Training Quality Council as meeting their quality criteria for Training Package support materials.

#### Developing Assessment Tools

When developing their own assessment tools, assessors must ensure that the tools:

- are benchmarked against the relevant unit or units of competency
- are reviewed as part of the validation of assessment strategies as required under 9.2i of the Standards for Registered Training Organisations, and
- meet the assessment requirements expressed in the Standards for Registered Training Organisations, particularly Standards 8 and 9.

A key reference for assessors developing assessment tools is the Training Package TAA04 Training and Assessment and the unit of competency TAAASS403A Develop Assessment Tools.

#### Conducting Assessment

This section details the mandatory assessment requirements and provides information on equity in assessment including reasonable adjustment.

#### Mandatory Assessment Requirements

Assessments must meet the criteria set out in Standard 8 from the Standards for Registered Training Organisations. For information, Standard 8 from the Standards for Registered Training Organisations is reproduced below.

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<sup>7</sup> DEST, 2005, *Metal and Engineering Training Package (MEM05)*, Volume One, pp 125–129. The *Assessment Guidelines* of MEM05 may also be accessed via the National Training Information Service website ([www.ntis.gov.au](http://www.ntis.gov.au)).

## 8 RTO Assessments

The RTO's assessments meet the requirements of the endorsed components of Training Packages and the outcomes specified in accredited courses within the scope of its registration.

8.1 The RTO must ensure that assessments, (including RPL):

- i comply with the assessment guidelines included in the applicable nationally endorsed Training Packages or the assessment requirements specified in accredited courses;
- ii lead to the issuing of a Statement of Attainment or qualification under the AQF when a person is assessed as competent against nationally endorsed unit(s) of competency in the applicable Training Package or modules specified in the applicable accredited course;
- iii are valid, reliable, fair and flexible;
- iv provide for applicants to be informed of the context and purpose of the assessment and the assessment process;
- v where relevant, focus on the application of knowledge and skill to the standard of performance required in the workplace and cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- vi involve the evaluation of sufficient evidence to enable judgements to be made about whether competency has been attained;
- vii provide for feedback to the applicant about the outcomes of the assessment process and guidance on future options in relation to those outcomes;
- viii are equitable for all persons, taking account of individual needs relevant to the assessment;
- ix provide for reassessment on appeal.

8.2 a The RTO must ensure that RPL is offered to all applicants on enrolment.

- b The RTO must have an RPL process that:
- i is structured to minimise the time and cost to applicants
  - ii provides adequate information, support and opportunities for participants to engage in the RPL process

### Advice on using simulation

Simulations may be used for assessment where it is not possible to assess a candidate whilst they are in productive work. The scope of the assessment may be for the entire unit of competency or some aspects of competence.

It is most important that the simulated environment reflects realistic workplace situations. This means that the simulation must be capable of covering a range of variability and different contexts to ensure that sufficient valid and reliable evidence of performance can be gathered. Using simulation should not be viewed as a substandard replacement to assessment in the workplace. Careful thought and preparation must be made so that the simulation complies with all of the requirements for gathering evidence and making assessment judgements.

### Advice on integrated assessment

The Metal and Engineering Training Package is comprised of units of competency that will rarely be used in isolation. All units will form part of a person's job role. No single unit of competency can be acquired in isolation and therefore opportunities for integrated learning and assessment activities should always be explored. Careful consideration of the profile of competencies will identify groups of units where integrated assessment (or co-assessment) can be applied.

Adoption of integrated assessment can provide significant savings in time, cost and effort of assessors and candidates. Assessment tools should be designed so that assessment evidence can be gathered for a group of units and the outcomes identified with those units. This approach can be quite adequately used to also deal with prerequisites.

#### **Advice on assessment of Prerequisite Units**

The Metal and Engineering 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 that are built up from a range of competencies. Any units of competency that underpin others are listed as prerequisites. The use of the term 'prerequisite' has been used for many years in the Metal and Engineering units of competency. In terms of training delivery and assessment, the term 'prerequisite' means that a person cannot be deemed 'competent' in the higher level unit until they are competent in the prerequisite units. An RTO may choose an integrated assessment approach (see above). In this case the actual assessment of prerequisites may occur concurrently with other units.

#### **Advice on graded assessment**

The minimum level of reporting assessment outcomes is at the unit level. Assessment outcomes must primarily be reported without grading on the basis of the candidate being either competent or not yet competent. However this does not preclude supplementary reporting based on endorsed quality principles. It should be noted that there cannot be any grading of 'competent'. However, supplementary reporting of some form of grading may occur where there is agreement between the Registered Training Organisation and their client. Any supplementary reporting of graded assessment outcomes must be shown as additional information on any testamur or transcript and not detract or obscure the report of the primary outcome.

#### **Further Sources of Information**

The section provides a listing\* of useful contacts and resources to assist assessors in planning, designing, conducting and reviewing of assessments against this Training Package.

- \* These resources have been included in the *Metal and Engineering Resource List*.

The following information is found in the assessment guidelines of other endorsed Training Packages and is also applicable for assessment within Metal and Engineering. This particular segment of information (pp 162-165) has been taken from the *Assessment Guidelines of the Information and Communications Technology Training Package (ICA05)*<sup>8</sup>.

#### 4.2.2.2 Checklist for developing assessment materials

The following checklist is offered as guidance for developing assessment materials:

- **Select the unit/s of competency to be assessed**

Identify the unit of competency in this Training Package that is to be assessed. The assessment resource may focus on a single unit of competency or a cluster or group of related units of competency.

- **Analyse the unit of competency**

The unit of competency describes the work and the required standards of performance. Read the full unit of competency carefully and familiarise yourself with the:

- *Unit Description*
- *Elements and Performance Criteria*
- *Range Statement*
- *Evidence Guide.*

Identify the key skills that the candidate will require to perform the work activity described in the unit of competency. These are:

- *Task Skills* – these involve performing the task to the required standard as described in the unit of competency.
- *Task Management Skills* – these involve managing a number of different tasks within the job.
- *Contingency Management Skills* – these involve fulfilling the responsibilities and expectations of the workplace.

- **Identify the type and amount of evidence to be collected**

Prepare a list of the evidence that might be collected to show that the candidate is able to perform the work activity described in the unit of competency. There are three broad categories of assessment evidence that may be used in conducting competency assessments. These are:

- *Product* – this refers to an item that is constructed or a service that is delivered.
- *Process* – this refers to the way in which a product is produced or achieved.
- *Knowledge* – this refers to the information that is required to perform the aspect of work described in the unit(s) of competency. This may include knowledge of specific information, knowledge of specific laws, regulations and Codes of Practice and knowledge of principles, processes and procedures.

This evidence may be collected through a variety of methods. These include:

*Direct*

- observation of workplace activities
- demonstration of specific tasks
- observation of activities under simulated workplace conditions

*Indirect*

- questioning – oral questioning, written tests, interviews

*Supplementary Evidence*

- supervisor reports

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<sup>8</sup> DEST, 2005, *Information and Communications Technology Training Package (ICA05)*, Volume One, Section 1.5, pp 1-125 – 1-158.

- employer references
- documentation about past or prior achievements
- portfolios.

The assessor must determine the type and amount of evidence that is required and how this will be collected.

- ***Plan the assessment activity***

Prepare a brief written description of the assessment activity that will be used to collect the required evidence. For example, this may be an observation of workplace activity, a simulation, a test or some other form of evidence gathering technique. The description does not have to be detailed but should at least describe, in broad terms, the nature of the activities to be undertaken. The description should detail the:

- type of evidence gathered under each evidence requirement (direct, indirect, supplementary)
- tasks which the candidate is required to do.

In planning the activity consideration should be given to using evidence gathering methods that:

- are appropriate to the industry context
- are gender and culturally inclusive
- take into account the language, literacy and numeracy skills of both the assessor and the candidate
- minimise the cost of assessment
- involve the collection of a variety of forms of evidence
- may be customised to take into account local conditions, site requirements and enterprise specific practices
- utilise industry and enterprise reference materials, such as standard operating procedures and quality systems
- allow for updating of evidence requirements and work practices in line with changes to legislation, regulations and Codes of Practice
- take account of safety considerations and the assessment environment, especially for New Apprenticeship pathways, which are likely to have first time workers and for assessment of high-risk operations or in high-risk industries.

- ***Prepare the assessment materials***

The assessment materials are developed in accordance with the plan for the assessment activity. The assessment materials should:

- address the relevant unit(s) of competency
- require the candidate to demonstrate the five key components of competency
- identify the evidence requirements and evidence collection methods
- include the resources needed to conduct the assessment activity/activities
- include instructions for candidates and those involved in administering the assessment activity/activities
- be checked for ease of use, validity, reliability, fairness and flexibility
- incorporate allowable adjustments to the assessment procedure.

- ***Validate the assessment materials***

The assessment materials should be piloted with a small sample of assessors. Information gathered through this process should be analysed to establish any amendments that may be required. The assessment materials are redrafted incorporating suggested amendments as appropriate.

- ***Prepare the final version of the assessment materials***

The assessment materials are published in an appropriate format, either print or electronic, and made available to assessors within the relevant organisation. Arrangements are put in place for the ongoing maintenance and cyclic review of the assessment resource.

### 4.2.2.3 Conducting Assessment

<p><b>Step 1</b> <b>Establish the assessment context</b></p>	<p>The assessor:</p> <ul style="list-style-type: none"> <li>• establishes the context and purpose of the assessment;</li> <li>• identifies the relevant units of competency, assessment guidelines and qualification framework in this Training Package;</li> <li>• identifies any NTQC noted support materials that have been developed to facilitate the assessment process;</li> <li>• analyses the competency standards and identifies the evidence requirements; and</li> <li>• identifies potential evidence collection methods.</li> </ul>
<p><b>Step 2</b> <b>Prepare the candidate</b></p>	<p>The assessor meets with the candidate to:</p> <ul style="list-style-type: none"> <li>• explain the context and purpose of the assessment and the assessment process;</li> <li>• explain the competency standards to be assessed and the evidence to be collected;</li> <li>• advise on self-assessment, including processes and criteria;</li> <li>• outline the assessment procedure, the preparation the candidate should undertake, and answer any questions;</li> <li>• assess the needs of the candidate and, where applicable, negotiate reasonable adjustment for assessing people with disabilities without compromising the integrity of the units of competency;</li> <li>• seek feedback regarding the candidate’s understanding of the units of competency, evidence requirements and assessment process;</li> <li>• determine if the candidate is ready for assessment and, in consultation with the candidate, decide on the time and place of the assessment; and</li> <li>• develop an assessment plan.</li> </ul>
<p><b>Step 3</b> <b>Plan and prepare the evidence gathering process</b></p>	<p>The assessor must:</p> <ul style="list-style-type: none"> <li>• establish a plan for gathering sufficient quality evidence about the candidate’s performance in order to make the assessment decision (and involve industry representatives in the development of plans for the validation of assessment);</li> <li>• source or develop assessment materials to assist in the evidence gathering process;</li> <li>• organise equipment or resources required to support the evidence gathering process;</li> <li>• coordinate and brief other personnel involved in the evidence gathering process.</li> </ul>
<p><b>Step 4</b> <b>Collect the evidence and make the assessment decision</b></p>	<p>The assessor must:</p> <ul style="list-style-type: none"> <li>• establish and oversee the evidence gathering process to ensure its validity, reliability, fairness and flexibility;</li> <li>• collect appropriate evidence and assess this against the elements, Performance Criteria, Range Statement and Evidence Guide in the relevant units of competency;</li> <li>• evaluate evidence in terms of the four dimensions of competency – task skills, task management skills, contingency management skills, and job/role environment skill;</li> <li>• incorporate allowable adjustments to the assessment procedure without compromising the integrity of the competencies;</li> <li>• evaluate the evidence in terms of validity, consistency, currency, equity, authenticity and sufficiency;</li> <li>• consult and work with other staff, assessment panel members or technical experts involved in the assessment process;</li> <li>• record details of evidence collected; and</li> <li>• make a judgement about the candidate’s competency based on the evidence and the relevant unit(s) of competency.</li> </ul>

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<b>Step 5 Provide feedback on the assessment</b>	<p>The assessor must provide advice to the candidate about the outcomes of the assessment process. This includes providing the candidate with:</p> <ul style="list-style-type: none"><li>• clear and constructive feedback on the assessment decision;</li><li>• information on ways of overcoming any identified gaps in competency revealed by the assessment;</li><li>• the opportunity to discuss the assessment process and outcome; and</li><li>• information on reassessment and the appeals process.</li></ul>
<b>Step 6 Record and report the result</b>	<p>The assessor must:</p> <ul style="list-style-type: none"><li>• record the assessment outcome according to the policies and procedures of the RTO;</li><li>• maintain records of the assessment procedure, evidence collected and the outcome according to the policies and procedures of the RTO;</li><li>• maintain the confidentiality of the assessment outcome;</li><li>• organise the issuing of qualifications and/or Statements of Attainment according to the policies and procedures of the RTO.</li></ul>
<b>Step 7 Review the assessment process</b>	<p>On completion of the assessment process, the assessor must:</p> <ul style="list-style-type: none"><li>• review the assessment process;</li><li>• report on the positive and negative features of the assessment to those responsible for the assessment procedures;</li><li>• if necessary, suggest to appropriate personnel in the RTO ways of improving the assessment procedures.</li></ul>
<b>Step 8 Participate in the reassessment and appeals process</b>	<p>The assessor must:</p> <ul style="list-style-type: none"><li>• provide feedback and counsel the candidate, if required, regarding the assessment outcome or process, including guidance on further options;</li><li>• provide the candidate with information on the reassessment and appeals process;</li><li>• report any disputed assessment decision to the appropriate personnel in the RTO; and</li><li>• participate in the reassessment or appeal according to the policies and procedures of the RTO.</li></ul>

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### 4.2.3 Integration of key competencies in Training Packages

The following information (pp 166-171) is reproduced from the *Qualifications Framework of the Metal and Engineering Training Package (MEM05)*<sup>9</sup>.

#### **The Key Competencies in the Metal and Engineering Training Package**

All Training Packages require the integration of Key Competencies either in each unit of competency, or across a qualification, depending on industry needs and preferences.

The Key Competencies are identified for each qualification level in the MEM05 Metal and Engineering Training Package.

The Key Competencies were first defined in 1992 in the project report, Putting General Education to Work: The Key Competencies Report (Mayer Committee 1992). The skills and knowledge they describe are essential for effective workplace participation and involve the sorts of capabilities commonly used by employers as selection criteria. They underpin the ability of employees to adapt to technological, organisational, societal and functional change.

The Key Competencies are generic, in that they apply to work in general, rather than to particular occupations or industries. They focus on the application of knowledge and skills in an integrated way in workplace situations. The seven Key Competencies are:

#### **1 Collecting, analysing and organising information**

The capacity to locate, sift and sort information in order to select what is required and to present it in a useful way, and evaluate both the information itself and the sources and methods used to collect it.

#### **2 Communicating ideas and information**

The capacity to communicate effectively with others using the range of spoken, written, graphic and other non-verbal means of expression.

#### **3 Planning and organising activities**

The capacity to plan and organise one's own work activities, including making good use of time and resources, sorting out priorities and monitoring one's performance.

#### **4 Working with others in teams**

The capacity to interact effectively with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a client and working effectively as a member of a team to achieve a shared goal.

#### **5 Solving problems**

The capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and the solution are clearly evident and in situations requiring creative thinking and a creative approach to achieve a desired outcome.

#### **6 Using mathematical ideas and techniques**

The capacity to use mathematical ideas, such as number and space, and techniques such as estimation and approximation, for practical purposes.

#### **7 Using technology**

The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems.

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<sup>9</sup> DEST, 2005, *Metal and Engineering Training Package (MEM05)*, Volume One, pp 21–28.

### Performance Levels

There are three levels of performance defined within the Key Competencies. These are stand-alone levels and do not correspond to the AQF qualification levels.

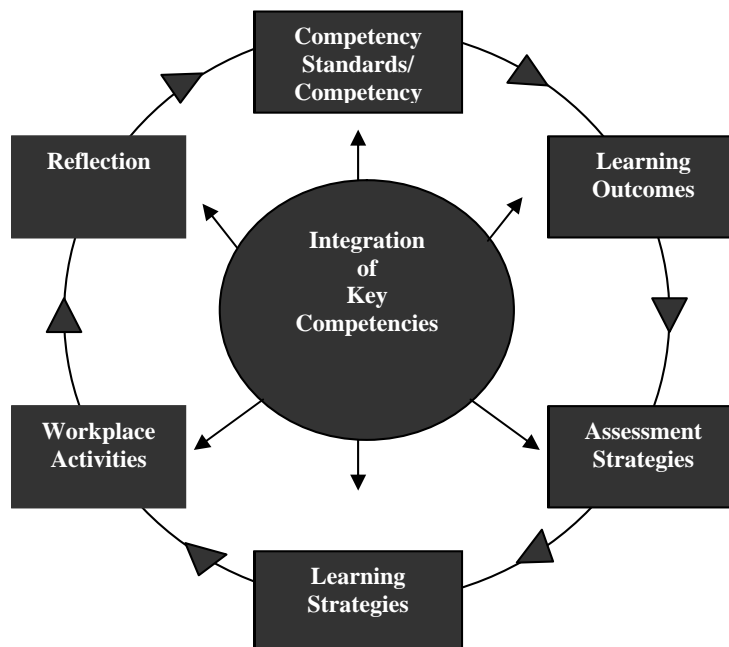
- Performance Level 1 is concerned with the level of competence needed to undertake activities efficiently with sufficient self-management to meet the explicit requirements of the activity, and to make judgements about the quality of outcomes against established criteria.
- Performance Level 2 describes the competence needed to manage activities requiring the selection, application and integration of a number of elements, and to select from established criteria to judge quality of process and outcome.
- Performance Level 3 describes the competence needed to evaluate and reshape processes, to establish and use principles in order to determine appropriate ways of approaching activities, and to establish criteria for judging quality of process and outcome.

However, relating performance to the specific industry or workplace context may be more useful than interpreting the somewhat abstracted performance levels provided above. Also, in evaluating the level of performance for the Key Competencies, consider the performance expectations at the AQF qualification level involved.

It should also be noted that required performance levels for the Key Competencies will vary according to their application in a workplace context. This variability will be influenced by the combination of competencies that describe the actual work or job role; the AQF level of application of those competencies and aspects of the particular workplace context. This means that assessment of performance against the Key Competencies cannot be made in isolation. It is therefore important that RTOs should exercise discretion in assessing the level of Key Competencies as integrated in this Training Package.

### Delivery and Assessment of Key Competencies

The Key Competencies are integral to workplace competency, and, as such must be explicitly considered in the design, customisation, delivery and assessment of vocational education and training programs as represented diagrammatically below.



#### **4.2.3.1 The Key Competencies at Certificate I in the Metal and Engineering Training Package**

The Certificate I engineering and boating qualifications will be used predominantly by people seeking to enter or just entering the workforce. It is expected that they will already have some aspects of the Key Competencies. They will need to be able to demonstrate performance at level 1 for some Key Competencies in order to meet the requirements of the mandatory units of competency as described for the qualifications. Further comment on each of the Key Competencies is shown below.

##### **1. Collecting, analysing and organising information**

This Key Competency would be required to a limited degree at the Certificate I level. The extent will depend on the selection of elective units of competency as well as their particular workplace application. Achievement of the mandatory units of competency for these qualifications will require demonstration of some ability to undertake the collection, analysis and organisation of information. Note that 'information' may also include data. For example, there may be a need to select the appropriate standard operating procedure for some aspect of the work. Another application will be experienced when working with a quality system and the use of information and data associated with that system.

##### **2. Communicating ideas and information**

Communication in any workplace is an essential competency. The mandatory unit of competency in Certificate I concerned with working with others requires the demonstration of adequate communication. For example, the correct interpretation of safety signage, standard operating procedures and quality system information are essential at this qualification level. Interpersonal communication is important and performance at level 1 is also required in giving and receiving simple information.

##### **3. Planning and organising activities**

Self planning and organising (within an overall framework) is required from all employees in a manufacturing or engineering enterprise, with performance at level 1 expected.

##### **4. Working with others and in teams**

Working with others is fundamental to the way most manufacturing and engineering enterprises work. Teams may be single level work area teams, multidisciplinary, multi-level teams, permanent teams, ad hoc teams or any other combination of people may be termed a 'team'. Performance at level 1 is expected to meet the requirements of the mandatory units of competency at the Certificate I level.

##### **5. Solving problems**

Problem solving at the Certificate I level is required. However, the extent will depend heavily on the selection of elective units of competency as well as their particular workplace application. Many enterprises would expect employees to be able to solve problems within the scope of their job role. This would particularly apply where there is some form of organisational improvement being undertaken. At this level the solving of problems would be in accordance with procedures, following problem solving techniques specified and implementing solutions defined in the procedures. Performance at level 1 would be required.

##### **6. Using mathematical ideas and techniques**

This key competency may require performance up to level one in the Certificate I qualifications. This will depend on the particular job role and the range of elective units of competency that have been selected. Manufacturing and engineering enterprises will all require the use of mathematical ideas and techniques. This may be limited to spatial judgements only but may also extend to measurement, use and manipulation of numbers as well as mathematical estimation.

##### **7. Using technology**

Most jobs in the manufacturing and engineering industry require some degree of interaction with technology. The extent of this interaction will depend on the selection of elective units of competency as well as their particular workplace application. Performance at level 1 may be required for the Certificate I qualifications.

#### **4.2.3.2 The Key Competencies at Certificate II in the Metal and Engineering Training Package**

The Certificate II engineering and boating qualifications may be used by people who are just entering the workforce or who are already in the workforce. It is expected that they will already have some aspects of the Key Competencies. This will depend on their work and life experiences. They will need to be able to demonstrate performance at level 1 for some or all of the Key Competencies in order to meet the requirements of the mandatory units of competency as described for the qualifications. Note that the two levels of Certificate II in Engineering have different mandatory requirements. Depending on the choice of elective units of competency as well as their particular workplace application, performance at level 1 will be generally required although level 2 may be required in some instances. Further comment on each of the Key Competencies is shown below.

##### **1. Collecting, analysing and organising information**

This Key Competency would be required to a limited degree at the lower level Certificate II in Engineering and essential for the other Certificate II qualifications. The extent will depend on the selection of elective units of competency as well as their particular workplace application. In addition, achievement of the mandatory units of competency for these qualifications will require demonstration of the ability to undertake the collection, analysis and organisation of information. Note that ‘information’ may also include data. For example, many of the elective competencies include a requirement of organisation and planning to do the job or task. This will involve the collection of information regarding procedures, specifications, settings, hazards and the like.

##### **2. Communicating ideas and information**

Communication in any workplace is an essential competency. The mandatory unit of competency in Certificate II concerned with working with others requires the demonstration of adequate communication. For example, the correct interpretation of safety signage, standard operating procedures and quality system information are essential at this qualification level. Interpersonal communication is important and performance at level 1 is also required in giving and receiving information.

##### **3. Planning and organising activities**

Self planning and organising (within an overall framework) is required from all employees in a manufacturing or engineering enterprise, with performance at level 1 expected.

##### **4. Working with others and in teams**

Working with others is fundamental to the way most manufacturing and engineering enterprises work. Teams may be single level work area teams, multidisciplinary, multi-level teams, permanent teams, ad hoc teams or any other combination of people may be termed a ‘team’. Performance at level 1 is expected to meet the requirements of the mandatory units of competency at the Certificate II level.

##### **5. Solving problems**

Problem solving at the Certificate II level is required. However, the extent will depend heavily on the selection of elective units of competency as well as their particular workplace application. Many enterprises would expect employees to be able to solve problems within the scope of their job role. This would particularly apply where there is some form of organisational improvement being undertaken. At this level the solving of problems would be in accordance with procedures, following problem solving techniques specified and implementing solutions defined in the procedures. Performance at level 1 would be required.

##### **6. Using mathematical ideas and techniques**

This key competency may require performance up to level one in the Certificate II qualifications, particularly in the higher level Certificate II in Engineering. This will depend on the particular job role and the range of elective units of competency that have been selected. Manufacturing and engineering enterprises will all require the use of mathematical ideas and techniques. This may be limited to spatial judgements only but may also extend to measurement, use and manipulation of numbers as well as mathematical estimation.

## **7. Using technology**

Most jobs in the manufacturing and engineering industry require some degree of interaction with technology. The extent of this interaction will depend on the selection of elective units of competency as well as their particular workplace application. Performance at level 1 may be required for the Certificate II qualifications.

### **4.2.3.3 The Key Competencies at Certificate III in the Metal and Engineering Training Package**

The Certificate III trade and production qualification outcomes are used by people who will be well established in the workforce. At their point of entry, they will be in similar positions to those people accessing the Certificate I and II qualifications. At Certificate III it is expected that people will have significant autonomy in their job role and will have developed the Key Competencies to a reasonable degree. As with the lower qualification levels, the choice of elective units of competency as well as their particular workplace application will determine the extent of their requirements and achievement of the Key Competencies. The Certificate III trade and production qualification outcomes will require performance at level 1 for all of the Key Competencies and perhaps at level 2 in some instances.

The Certificate III Technical qualification is an entry level qualification for people undertaking 'technical work' as defined in the relevant industrial instruments. It is expected that they will already have some aspects of the Key Competencies. They will need to be able to demonstrate performance at level 1 for some Key Competencies in order to meet the requirements of the mandatory units of competency as described for this qualification. Performance requirements in other Key Competencies will depend on the selection of elective units of competency as well as their particular workplace application. Further comment on each of the Key Competencies is shown below.

#### **1. Collecting, analysing and organising information**

This Key Competency would be required for all of the Certificate III qualifications in order to meet the requirements of the mandatory units of competency. Many of the competencies chosen as part of the qualification will include the need for demonstration of the ability to undertake the collection, analysis and organisation of information. Note that 'information' may also include data. For example, many of the elective competencies include a requirement of organisation and planning to do the job or task. This will involve the collection of information regarding procedures, specifications, settings, hazards and the like. Performance at level 1 would be required.

#### **2. Communicating ideas and information**

Communication in any workplace is an essential competency. The mandatory units of competency at Certificate III require the demonstration of adequate communication to at least performance level 1. This would extend beyond the simple interpretation of safety signage, standard operating procedures and quality system information. For example, when assisting in the provision of on the job training there will be a need for interpersonal communication of giving and receiving information to performance level 2.

#### **3. Planning and organising activities**

Self planning and organising (within an overall framework) is required from all employees in a manufacturing or engineering enterprise, with performance at level 1 expected.

#### **4. Working with others and in teams**

Working with others is fundamental to the way most manufacturing and engineering enterprises work. Teams may be single level work area teams, multidisciplinary, multi-level teams, permanent teams, ad hoc teams or any other combination of people may be termed a 'team'. Performance at level 1 is expected to meet the requirements of the mandatory units of competency at the Certificate III level.

### **5. Solving problems**

Problem solving at the Certificate III level is required. However, the extent will depend heavily on the selection of elective units of competency as well as their particular workplace application. Typical trade and production work at this level will require the ability to solve problems within the scope of the particular job role. Performance at level 1 would be required.

### **6. Using mathematical ideas and techniques**

This key competency requires performance up to level one in the Certificate III qualifications. All manufacturing and engineering enterprises will all require the use of mathematical ideas and techniques. At this qualification level there will be a need for accurate use and manipulation on numbers as well as measurement and estimation. Performance at level 2 may be required in some instances, depending on the selection of elective units of competency as well as their particular workplace application.

### **7. Using technology**

Jobs in the manufacturing and engineering industry at the Certificate III level will require some degree of interaction with technology. The extent of this interaction will depend on the selection of elective units of competency as well as their particular workplace application. Performance at level 1 will be required for the Certificate III qualifications and may need to extend to level 2 in some cases.

#### **4.2.3.4 Implications for vocational education and training**

The key competencies need to be explicitly developed and applied in vocational education and training delivery and assessment in order to ensure the flexibility and adaptability of staff to respond effectively to current and future directions and challenges within Australian workplaces.

This means that the key competencies cannot be considered as supplementary to vocational competency but integral to it. They are part of good learning and essential to good practice. It is critical, therefore, that Training Package developers, support material developers, teachers and trainers deliberately incorporate the key competencies into the design, customisation, delivery and assessment of vocational education and training programs.

The traditional training focus has been on technical skills. However, these skills must be developed in ways that enable them to be transferable across different applications and work contexts. This requires a conscious and deliberate effort to incorporate the key competencies explicitly into every stage of the training cycle (represented in the diagram on p 167) through units of competency and Training Package development, delivery, learning, assessment and reflection.

There is a need to move from an approach centred on the classroom to a contextualised problem-solving approach in which the learner is central to the process and the learning reflects the realities, processes and procedures of the workplace.

Such an approach is characterised by:

- a focus on the development of thinking skills in relation to vocational competency
- assessment integrated with training
- collaborative learning reflecting work-based teams
- competencies learnt and assessed in the context of real problems in actual or closely simulated workplace environments
- learner-centres with teachers/trainers/work supervisors as facilitators and mentors
- the explicit development of the key competencies to enhance competency in reasoning and making sound and defensible judgements.

The move to a problem-solving approach means recognising the learner and his/her learning and vocational contexts as central to the learning process. Achieving competency should not be viewed as a progression through learning and assessment activities, but rather as an individual interacting in a structured way with knowledge, skill and vocational contexts in order to better understand and work with them.

The following information is found in the assessment guidelines of other endorsed Training Packages and is also applicable for assessment within Metal and Engineering. This particular segment of information (pp 172-178) has been taken from the *Assessment Guidelines of the Information and Communications Technology Training Package (ICA05)*<sup>10</sup>.

#### **4.2.4 Diversity, Equity and Accessibility**

##### **4.2.4.1 Diversity and Equity**

A useful definition of diversity is ‘the quality of being different and unique at an individual or group level’. Diversity is often discussed in relation to ethnicity, culture, gender, race, age, functional diversity, personality and learning styles. Recognising and valuing diversity means creating and sustaining an environment in which everyone can achieve their full potential. This may include removing systemic barriers and creating new ways of doing business.

In appropriately acknowledging the needs of all individuals engaged in learning or assessment processes, several principles of best practice in working with members of equity groups should be kept in mind:

- the learning and assessment environment should not disadvantage the candidate
- practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English and where appropriate and possible communication in languages other than English needs to be allowed for
- language and literacy demands of the assessment task should not be higher than those of the work role
- the demands of assessment and the methods used need to take into account the key competencies performance level of the unit in question
- adjustments to assessment practices are considered ‘reasonable’ if they do not impose an unjustifiable hardship on a training provider or employer and do not change the competency outcomes.

##### **4.2.4.2 Information on Training and Assessment for People with Special Needs**

Good vocational training and assessment, like customer service, is often about making adjustments to what we do to meet individual needs. When learning to work, every person has slightly different needs. Rarely do stereotypes, clichés or generalisations hold true. This section is intended to assist [metal, engineering and related services industries] employers, trainers and assessors to meet the reasonable adjustment needs of learners with disabilities.

An open mind, common sense and tailoring to individual circumstances will, as often as not, ensure employees and learners achieve the standards that customers, employers and training providers expect. Reasonable adjustments need only be that – reasonable. ... It is about identifying what adjustments might reasonably be made and how they may be put into place. The goal is not to discount the quality or standards of work expected of an employee or learner.

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<sup>10</sup> DEST, 2005, *Information and Communications Technology Training Package (ICA05)*, Volume One, Section 1.5, pp 1-125 – 1-158.

More than one in seven Australians of working age are people with some form of disability, yet less than one in twenty people with special needs are engaged in the Vocational Education and Training (VET) system. (ABS 1998) This compares with the general rate of VET participation of nearly one in 10 for all Australians. People with special needs are twice as likely as others to be unemployed. This exclusion costs – customers and employees with potential are lost to the industry.

By including people with special needs in training, the industry enhances the Australian characteristic of fairness, and this, for many customers, enhances loyalty. Finally, it is worth remembering that we are all at risk of acquiring a physical or sensory impairment through accident or a mental illness triggered by the stresses of life.

### **What is a Disability?**

A disability presents some impairment to everyday activity. In practice, some people with a disability do not have any impairments resulting from their disability. For example, a person who has a hearing impairment that is compensated for by a hearing aid may function without any adjustments.

Disabilities may affect or relate to a range of human functions including mobility, stamina, lifting ability, memory, vision, hearing, speech, comprehension and mood swings. This may be due to accidents, illness or birth.

Detailed information on how to adjust training and assessment for each of these areas cannot be provided within this section, however, there are additional resources available, many of which are listed\* towards the end of this section.

- \* These resources have been included in the *Metal and Engineering Resource List*.

#### **4.2.4.3 Adjustments in Training and Assessment**

An individual's access to the assessment process should not be adversely affected by restrictions placed on the location or context of assessment beyond the requirements specified in this Training Package.

Reasonable adjustments can be made to ensure equity in assessment for people with disabilities. Adjustments include any changes to the assessment process or context that meet the individual needs of the person with a disability, but do not change competency outcomes. Such adjustments are considered 'reasonable' if they do not impose an unjustifiable hardship on a training provider or employer. When assessing people with disabilities, assessors are encouraged to apply good practice assessment methods with sensitivity and flexibility.

The Disability Discrimination Amendment (Education Standards) define disability as:

- total or partial loss of the person's bodily or mental function; or
- total or partial loss of a part of the body; or
- the presence in the body of organisms causing disease or illness; or
- the presence in the body of organisms capable of causing disease or illness;
- the malfunction, malformation or disfigurement of a part of the person's body; or
- a disorder or malfunction that results in the person learning differently from a person without the disorder or malfunction; or
- a disorder, illness or disease that affects a person's thought processes, perception of reality, emotions or judgment or that results in disturbed behaviour.

Training Package developers and Registered Training Organisations are required under the Standards to take reasonable steps to ensure that Packages are designed in such a way that the learner is, or any learner with a disability is, able to participate in the learning experiences (including assessment and certification requirements) of the program, and any relevant supplementary program, on the same basis as a learner without a disability, and without experiencing discrimination.

There are a number of practical things that can be done as part of providing reasonable adjustment to employees and learners with special needs to enable them to undertake their training and assessment. Some suggestions are included below.

<b>Type of Disability</b>	<b>Reasonable Adjustments</b>
Mobility impairment	Provision of wheelchair accessibility, access to aids such as for holding documents, adjustable tables, note taking support, oral rather than written presentations or exams, use of a personal computer, lifting limits
Vision impairment or people who are blind	Use of audio tapes, enlarged text and images, enlarged computer screen images, use of voice synthesisers on computers, good lighting or reading lamps, Braille translations, provision for guide dogs, avoid moving furniture without informing the person, provision of additional writing time for assignments/tests
Hearing impairment or people who are deaf	Use of telephone typewriters, audio loops for people using hearing aids, use of Plain English documents, sign language interpreters for training and assessment, fire and alarm systems fitted with flashing lights.
Intellectual disability	Practical learning sessions, repetition of learning exercises, use of Plain English, use of mentors, assessment that is appropriate to the skill, i.e. avoiding written test for practical tasks, providing additional time
Psychiatric disability	Use of reflective listening skills, identification and avoidance of stresses, use of on-going rather than formal assessments, providing 'time-out' breaks in assessment
People with acquired brain injury	Providing time and patience during training and assessment, using reflective listening skills, providing memory aids, e.g. posters, notes, minimisation of stress
Speech impairment	Provision of time and patience, paraphrasing, getting them to put things in writing, minimising stress

Clearly, each case will be different and will need to be discussed with the learner, and in many cases expert help may be needed, at least in the initial stages. There are many sources of help to assist in employment, training and assessment of a person with a disability.

#### **4.2.4.4 Information on Training and Assessment for People from Aboriginal or Torres Strait Islander Backgrounds**

... it is expected that an individual's access to the assessment process should not be adversely affected by restrictions placed on the location or context of assessment beyond the specific outcomes required by this package.

Where [the Training Package] or elements of it are being used in Aboriginal or Torres Strait Islander communities, local stakeholders should be involved in the development and implementation of its training and assessment arrangements ... some of the issues to be considered include the need for effective training and assessment planning, appropriateness of delivery approaches, suitability of venues, availability of resources and the development of appropriate learning exemplars and activities. Suggestions for consideration against a number of these issues are provided in the [the *Metal and Engineering Resource List*].

### **General Cultural Issues that May Impact Training**

There are hundreds of Aboriginal or Torres Strait Islander cultures and languages and therefore training and assessment should be encouraged to have a local focus to maximise effectiveness. Individual Aboriginal or Torres Strait Islander communities need to be involved in the development and implementation of training and assessment and in some circumstances communication in languages other than English may need to be allowed for. This could be particularly relevant for those people completing qualifications in remote communities.

Some of the issues to be considered include:

- ownership and/or custodial rights and responsibilities within Aboriginal or Torres Strait Islander cultures and nations, including the rights of people to 'identify with' people and Country and exercise affiliations, even where these have not been previously known, recognised or exercised
- cross-cultural issues, not only in terms of Aboriginal or Torres Strait Islander/non-Aboriginal or Torres Strait Islander interactions but also between and within Aboriginal or Torres Strait Islander cultures, nations and sub-groupings where inter-relationships can be extremely complex and sensitive
- 'rights' of people to speak on behalf of and represent groupings, these being generally invested in Elders or other Aboriginal or Torres Strait Islander people who are recognised by their community as custodians of cultural knowledge
- attitudes towards cultural heritage aspects that can be shared without compromise and the ways in which this can be achieved. For example, this may impact on who teaches knowledge, who studies units and the cultural protocols that govern the ways in which this is done
- recognition that Aboriginal or Torres Strait Islander arts and cultures are dynamic and are continually growing and developing and not fixed in a particular view of the past
- respect for the rights of Aboriginal or Torres Strait Islander peoples to refuse to pass on information, including details about family history, kinship systems, Country, significant sites and other cultural knowledge
- awareness of the sensitivities that may be felt by some Aboriginal or Torres Strait Islander people when researching their own culture, Country and family systems, particularly when such research impacts on personal identity.

### **Planning for Training and Assessment**

There are a number of issues that should be considered when planning for the delivery of training or the assessment of individuals, these include:

- consulting Elders or other Aboriginal or Torres Strait Islander people who are recognised by their community as custodians of cultural knowledge about appropriate methods for accessing and using local knowledge
- inviting the involvement of the local Aboriginal or Torres Strait Islander community, particularly Elders, at all stages of the planning, development, training and assessment process. Elders are the custodians of knowledge, as well as the authorities from whom permissions must be sought for in relation to issues such as which knowledge can be shared, the ways in which this sharing must occur and how its application can be best assessed
- setting up local Aboriginal or Torres Strait Islander reference groups to advise on training development (may include organisations such as Local Aboriginal Land Council, local community arts centre, Aboriginal Education Consultative Group)
- allowing time to develop rapport and trust, to develop and explore viewpoints, on-going consultation, communication and problem-solving
- ensuring participation of local Elders – sitting in on sessions/activities, as presenters, mentors, advisors and 'supporters', providing context and 'grounding'. This 'authority' aspect is very important and in many instances, the mere presence of key Elders, even if they are not taking an active role, lends both authority and permission
- locating training and development activities in the local community and promoting and ensuring a sense of community ownership, involvement, partnership and control.

## **Approaches to Training and Assessment**

In order to ensure that Aboriginal or Torres Strait Islander people are not disadvantaged ... a number of ideas could be considered where appropriate, including:

- orally-based training and assessment with explanation and demonstration
- working in pairs for training and assessment
- small or large group work for training and assessment: assessment dimensions for Aboriginal or Torres Strait Islander peoples may include a 'group' component as well as an 'individual' component
- culturally appropriate presentations for training and assessment, e.g. presentations or art pieces in a medium appropriate to local culture
- using artwork or illustrated oral presentations/talks, for presentation and assessment.
- consulting learners about preferences and how they feel they can best demonstrate their competence
- taking a flexible approach to time and achievement of outcomes
- flexible delivery and assessment processes
- identifying culturally appropriate and sensitive trainers and assessors with a demonstrated ability to work effectively with local Aboriginal or Torres Strait Islander communities
- training external trainers in appropriate and localised approaches and providing essential community and cultural background information/support
- developing all training as part of an overall empowerment and confidence-building program
- accommodating priorities and obligations within local communities to avoid conflict with training and assessment activities
- exploring perceptions and understandings 'in community'
- allowing multiple, holistic and personalised assessment opportunities
- identifying appropriate materials/methods through community and potential learner consultations
- tailoring training and assessment for specific communities rather than applying 'blanket' solutions/methods, recognising that there are many localised Aboriginal or Torres Strait Islander 'cultures' and not a single one
- personalising training materials with appropriate, local illustrations and applications
- training and assessment integrated with work activities as much as possible
- structuring training and assessment as on-going work experience.

## **Training and Assessment Venues**

A number of basic operational issues should also be considered, including:

- What are locally familiar, appropriate, preferred and available venues?
- Are 'classrooms' or other interior settings available or appropriate?
- Is an outdoors location preferred/more appropriate/feasible?
- What innovative technologies (e.g. mobile and wireless) could be used in the field?
- Are assistive technologies needed and available?
- Is on-the-job training and assessment most appropriate and how is this best organised?
- Are occupational health and safety issues addressed?
- Do local climatic conditions affect training and assessment locations and approaches?

## **Training and Assessment Resources**

The appropriateness of resources can be pivotal to the success or failure of training and assessment activities, particularly where cultural differences may be present. The presentation of training and assessment of individuals against ... competencies may present considerable challenges in this regard, particularly in remote communities. The following ideas should be considered when selecting or developing resources:

- selection of appropriate trainers and assessors
- availability, accessibility and appropriateness of written, audio-visual, photographic, electronic or other resource materials such as necessary equipment
- development or adaptation of appropriate resource materials

- availability of electricity or availability at required times in remote training and assessment locations
- availability of internet access for online research, training and assessment, where appropriate.

The actual materials, exemplars and activities utilised in ... VET training and assessment should be carefully reviewed with the following issues taken into consideration:

- Do existing training resources meet the needs of Aboriginal or Torres Strait Islander candidates or is there a need for additional material?
- Are learners going to meet visitors from outside local cultural groupings?
- Can activities be developed that bridge traditional cultural needs and obligations and those of varied outside visitors who also have great cultural diversity?
- Are activities contained completely within a limited cultural world sufficient to achieve the outcomes required by the standards?
- Do set activities enable learners to demonstrate their competence and satisfy the requirements of the competency standard/qualification level? The challenge is in balancing local situations and needs with national competency standards and qualifications. Qualifications are national and therefore 'portable' and these aspects must be considered.
- Are existing activities within resources relevant, able to be adapted according to local needs or do they need replacing with your own or others?

Clearly, each case or set of circumstances will be different and will need to be discussed with the learner(s). In some case expert help may be needed, at least in the initial stages. There are sources of help to assist in training and assessment of Aboriginal or Torres Strait Islander candidates, some are listed [in the *Metal and Engineering Resource List*].

#### **4.2.4.5 Language, Literacy and Numeracy**

In everyday workplace tasks it is common for a person to use and respond to spoken and written language and use numeracy skills at the same time. These skills are applied within a cultural context that needs to be interpreted and responded to appropriately.

When designing workplace learning and assessment tasks, the trainer and assessor should be aware of this interlinking of language, literacy and numeracy. However there will also be situations in which only one of these skills is the focus of the training.

Although you will find the terms 'language, literacy and numeracy' generally used together they are not interchangeable or always linked. The terms are defined below.

#### **Language**

In its broadest sense, language involves the words, verbal structures and gestures we use to convey meaning. In using language we generally use a combination of communication forms such as speaking, listening, reading, writing and visual communication. Visual communication skills underpin the agreed language of the Australian deaf community, Australian Sign Language (AUSLAN).

Language can also refer to individual languages such as English, Mandarin, Warlpiri. Our workplaces often involve a mix of language groups and sometimes workers can hold technical competency without English language competency.

Language changes over time and context. Industries have their own vocabulary, including jargon, technical terms and acronyms that workers must understand. This can be very challenging for some people, particularly those for whom English is not their first language. Take the word 'cookie' for example. A baker may bake it, a photographer may attach it to a light stand and an ICT specialist may stop it being transmitted over the internet.

Effective cross-cultural communication requires a range of skills including the ability to appreciate that there may be variations in the value placed on the communication forms of

language. For example, while written language is highly regarded in the English language, Indigenous languages place higher value on verbal and visual communication forms.

### **Literacy**

Literacy is the ability to read and use written information as well as to write appropriately, in a range of contexts. Literacy involves the integration of speaking, listening, and critical thinking with reading and writing. Literacy skills enable us to interact with one another to achieve particular purposes: to explain, debate, retrieve and provide information, explore issues, entertain and create.

Literacy is about our social application of language, for example in our homes, communities, schools and workplaces. Like language, literacy practices change over time and context. We have seen this over the last decade with emerging multimedia and information technologies and our multi cultural society.

The literacy demands placed on individuals also change throughout their lifetimes. As we experience new situations we need to continually adapt and extend our literacy skills.

### **Numeracy**

Numeracy involves the practical application of mathematical skills to absorb, use and critically evaluate information in numerical or graphical form.

Depending on the context this can include basic number skills, spatial and graphical concepts, the use of measurement and problem solving. Numeracy may also involve literacy, for example when extracting mathematical information from written text.

In the workplace the methods used to achieve certain numeracy tasks will differ according to the workplace requirements, technology and culture.

Once again it is important to reiterate several important principles:

- the learning and assessment environment should not disadvantage the candidate
- practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English and where appropriate and possible communication in languages other than English needs to be allowed for
- language and literacy demands of the assessment task should not be higher than those of the work role
- the demands of assessment and the methods used need to take into account the key competencies performance level of the unit in question
- adjustments to assessment practices are considered 'reasonable' if they do not impose an unjustifiable hardship on a training provider or employer and do not change the competency outcomes.

## **4.3 List of Assessment Resources**

A list of resources and organisations is provided in the *Metal and Engineering Resource List* ([www.boardofstudies.nsw.edu.au](http://www.boardofstudies.nsw.edu.au)) to assist assessors in planning, designing, conducting and reviewing of assessments against the Metal and Engineering Training Package (MEM05).

#### 4.4 Programming Assessment

An integrated approach to assessment, in which a number of elements or units of competency are assessed together, should be adopted. This accords with the concept of competence as the integration of a wide range of skills, knowledge and attitudes.

This approach also reduces the danger of over-assessment, which can easily occur if units and elements of competency are assessed individually.

In addition, it is preferable that assessment be integrated with training delivery.

Some forms of assessment will be ongoing. Evidence of competence gathered through the observation of student performance in the classroom, in the workplace or in a simulated work environment will provide one means of ongoing assessment. Questioning of students in the course of teaching and learning activities, self-assessment and peer assessment and reports from workplace supervisors will also allow evidence of competence to be gathered on an ongoing basis.

Other evidence may be collected through specific assessment tasks and events such as projects and assignments, portfolios, written and practical tests and presentations, role-plays and simulations.

It is advisable for teachers and assessors to decide in advance on the forms of assessment and evidence-gathering methods to be used for various units or groups of units and devise a planned program of assessment.

Where specific assessment events are to be used these should be scheduled well in advance, keeping in mind the assessment demands placed on students in their other HSC subjects. As with other HSC courses, students should be informed in writing of school (or other RTO) requirements for assessment in each course.

#### 4.5 Recording Assessment

It is advisable that a competency record be maintained containing information about both units and elements of competency. The *Metal and Engineering Competency Record* developed by the Board of Studies as part of the syllabus documentation may be used for this purpose. Alternatively, Registered Training Organisations (RTOs) may use records designed by themselves or by industry bodies. Schools and other RTOs will be required to report to the Office of the Board of Studies on units of competency for which students have been assessed as competent.

A sample record sheet for an individual unit of competency from the Board of Studies competency record is shown below.

The competency record also contains the following proformas:

- forms for recording student, school, RTO and work placement host employer details
- a summary list of units of competency for each available (or partly available) AQF VET qualification
- a verification statement.

**4.5.1 Competency Record – sample unit of competency record sheet**

**MEM16007A** *Work with others in a manufacturing, engineering or related environment*

<b>Element of Competency</b>	<b>Competent (Assessor Signature)</b>
1 Identify roles and responsibilities	
2 Plan activities	
3 Work with others	

**VERIFICATION OF ACHIEVEMENT OF UNIT OF COMPETENCY**

I, \_\_\_\_\_, of \_\_\_\_\_  
 (name of assessor) (Registered Training Organisation)

certify that

\_\_\_\_\_

(name of student)

has demonstrated competence in the unit of competency

**MEM16007A** *Work with others in a manufacturing, engineering or related environment*

Signature \_\_\_\_\_ Date \_\_\_\_\_

## 4.6 Sample Assessment Items

It is preferable that assessment be integrated with training delivery. The programs provided in Section 3 of this document provide samples of integrated approaches to programming and assessment.

The following sample assessment tasks have been included in sample programs in Section 3 of this Support Document. The sample assessment schedule in 4.6.1 indicates the performance criteria which may be assessed during completion of the sample assessment tasks.

It should be noted that this is **NOT** the only way to organise assessment for the Metal and Engineering Curriculum Framework; rather it is *one possibility*. The performance criteria to be assessed by the sample tasks will *depend on the teacher's interpretation, development and delivery* of each task.

### Task 1: Work placement activities & journal

Students complete a number of activities during work placement and journal their work placement experiences.

(Option – encourage the students to journal any industry visits and general learning and activities undertaken during class/workshop.)

This may include:

- organisation/company policy/procedure for:
  - code of conduct
  - risk management in the workplace
  - reporting tool and equipment faults
  - OHS monitoring and reporting
  - dealing with emergencies
  - prevention of discrimination and harassment in the workplace
  - quality assurance and non-compliance of work outcomes to specifications
- environmental management
- employment conditions
- organisation/company flow chart (hierarchical structure)
- emerging/current technology
- clean-up procedures (work area, tools and equipment)
- interview of an employee – general aspects of working in the industry and career path to date, as well as future ambitions
- current issues of concern to the manufacturing, engineering and related services industries
- how a organisation/company plans and prepares for different workplace activities
- opportunities to:
  - use tools and equipment
  - handle materials
  - plan for routine tasks
  - carry out measurements and calculations
  - read and interpret drawings
  - work with others
  - undertake basic tasks/projects.

**Task 2: Newspaper scrapbook**

Each student is assigned one week in the school term. During that week they are required to purchase a major city newspaper (daily) as well as obtain their local paper and locate articles identifying information and/or issues for the manufacturing, engineering and related services industries. Each student provides a summary of discovery at the conclusion of their week.

**Task 3: Extended response: Environmental issues in the industry**

Extended response question – environmental issues in the manufacturing, engineering and related services industries and/or housekeeping and clean-up procedures with due consideration to the environment and OHS.

**Task 4: OHS written test**

Students undertake a written assessment to test their ‘*required knowledge*’ (ie the underpinning OHS theory).

**Task 5: Workplace inspection – risk assessment**

Using school-developed workplace inspection procedures, students work in pairs or small groups to carry out a workplace inspection on the school workshop.

(Alternatively, each student pair could be allocated a different aspect of the school workshop – eg materials rack, tool storage area or welding bay – or piece of equipment, and their findings collated to form a complete report on the workshop.)

The inspection must follow a risk management approach – identify hazards; assess associated risks; control measures to eliminate/minimise risks; and monitor and review control measures.

In consultation with teacher, students are to assess using a risk assessment matrix, apply hierarchy of control and establish monitoring procedures.

Alternatively (or in addition), this task could be undertaken on work placement in consultation with the students’ supervisor.

**Task 6: Personal protective equipment (PPE), safety devices and emergency equipment**

Students are to demonstrate their ability to:

- select, use, maintain and store PPE
- use safety equipment and devices (other than PPE)
- identify and use emergency equipment.

**Task 7: Scenario – dealing with an emergency**

Students are to demonstrate their ability to follow emergency procedures for a given scenario. The scenario should be appropriate to the workshop environment, for example, a fire involving flammable substances in the welding area.

This includes:

- appropriate behaviour to take in an emergency situation
- contacting appropriate personnel and emergency services and reporting the emergency situation
- evacuation of a site through simulated response to an emergency complying with workplace procedures.

**Task 8: Visual communication test**

Students undertake a written assessment to test their knowledge of meaning and use of signage, symbols, gestures and signals common to the manufacturing, engineering and related services industries.

**Task 9: Work order**

In accordance with industry practice, this is a document which outlines specific requirements for a designated task. Typically this may include:

- the scope of work to be undertaken
- time frames
- clients (internal/external customer/s)
- specifications
- materials/cutting list.

As students progress through the course they will proceed from following work orders as directed by their teacher through to generating their own.

**Task 10: Extended response: Quality systems and procedures**

Extended response question – the role of employees in quality assurance and achieving quality work outcomes.

**Task 11: Written documents**

Students correctly and accurately complete a range of workplace documents.

**Task 12: Work/job plan – individual and team task**

Each student is to develop a work/job plan for one of their individual workshop project/s. This is a structured outline of how the job/project will be undertaken to maximise efficiency and quality.

Each student is also required to work in a team to develop a work/job plan for a group or class workshop project.

Each job plan should:

- be clear and logically presented
- ensure tasks are ordered in an efficient sequence
- contain required measurements and calculations
- identify material, tools and equipment requirements
- include sketches if required
- indicate a completion timeframe
- incorporate quality assurance checks.

The job plan is typically written with reference to relevant drawings and/or work order and must be checked by teacher/supervisor prior to beginning work.

### **Task 13: Self and peer evaluation**

At regular intervals during a project, or as team members finish working in a designated role, complete a peer and self evaluation sheet on their performance and how their performance has impacted on the production of the project. The self evaluation sheet could address:

- time management
- work sequencing
- meeting quality requirements
- OHS concerns/issues
- tools, equipment and techniques used
- skills developed or improved
- customer relations
- teamwork.

### **Task 14: Quality improvement system**

Investigate the requirements of one quality improvement system currently in operation in a manufacturing, engineering or related services industries workplace.

### **Task 15: Workshop assistant**

On a rotational basis each month, allocate the responsibility of ‘workshop assistant’ to a team of two or three students. These students will assist the teacher with housekeeping in the school workshop. Students should display an understanding of OHS, environmental awareness, storage requirements and ease of access for materials and cleaning, maintenance and storage of tools, plant and equipment.

### **Task 16: Workgroup leader**

On a rotational basis each fortnight, allocate the responsibility of ‘workgroup leader’ (in partnership with the teacher) to a student. This student is responsible for the workshop clean-up procedures. This includes allocation of cleaning duties to each student in the class, as well as safe storage of student jobs, return of materials, tools and equipment to correct location, and reporting of any tools and equipment requiring maintenance or repair.

### **Task 17: Material Safety Data Sheet (MSDS)**

Allocate to each student one material that will be used in the school workshop during their metal and engineering course. They are to contact the supplier/manufacturer (by telephone, letter, website, etc) to obtain the MSDS. Prior to the material being used, the student will provide the class with a copy of the MSDS and brief the other students on the main points and safe use.

### **Task 18: Tools, plant and equipment**

Each student is allocated a different hand and power tool and piece of plant/equipment commonly used in the manufacturing, engineering or related services industry. Students produce a computer-generated:

- information sheet (maximum one A4 page) with the following information:
  - name
  - sketch/diagram/photo
  - characteristics
  - purpose (use and limitations)
  - OHS requirements (hazard controls and PPE and for plant/equipment only – responsibilities of the supplier/hire firm and operator)
  - training/qualifications required (school and industry expectations)
- pre-operational checklist.

Each student ‘delivers’ an induction course to the other students (in partnership with the teacher) for their allocated hand and power tool and piece of plant/equipment.

Students are to be given several opportunities throughout the metal and engineering course to safely use and maintain a range of tools and equipment, as well as to check for serviceability and rectify or report any faults. These opportunities can arise during practical tasks/projects and/or may be demonstrated during work placement; or ‘work stations’ could be set up in the school workshop with different tools – students visit each station to demonstrate safe use and maintenance of each tool.

### **Task 19: Technical drawings**

For a variety of tasks/projects, read and interpret a range of technical drawings including:

- checking and validating the drawing against job requirements
- confirming version status as being current
- identifying:
  - the relationship between views contained in the drawing
  - objects/components/assemblies represented in the drawing
  - symbols used
  - units of measurement and dimensions
  - materials to be used
- understanding of instructions contained in the drawing and actions to be taken in response.

**Task 20: Toolbox**

A sheet-metal toolbox is to be constructed as per supplied drawings. This project will include a range of activities and processes including measuring, marking out, cutting, folding and assembly.

Associated activities are to include quality assurance procedures and checks, performing computations and development of job/task plans.

**Task 21: Vice/clamping device**

For example, a G-clamp, sash cramp, 'hold-down' clamp or bench vice.

Project will include threaded clamping mechanism to form a simple machine. Students will demonstrate a range of engineering processes including measuring, marking out, testing, drilling and tapping, welding and assembly.

Associated activities are to include quality assurance procedures and checks, performing computations and development of job/task plans.

**Task 22: Bush BBQ/pizza oven/camp oven**

A wood-fired cooking apparatus fabricated from steel sheet or plate.

Associated activities are to include quality assurance procedures and checks, performing computations and development of job/task plans.

**Task 23: Industry-specific class project**

All class members are required to take an active role in the class project – working together to achieve a common purpose. The project should focus on a particular area of the manufacturing, engineering or related services industries (for example boating services, fabrication, mechanical, electrical/electronic, jewellery manufacture or marine craft construction).

The project should include:

- identifying roles and responsibilities – individual and others in the workgroup
- planning activities – setting common goals, objectives and task requirements, as well as determining and agreeing on individual tasks
- undertaking the project with members of the work group
- monitoring the progress of the workgroup.

Associated activities are to include quality assurance procedures and checks, performing computations and development of job/task plans.

**Task 24: Measurement and calculation exercises**

A range of measurement and calculation exercises typical to a manufacturing, engineering and related services industries environment.

Include:

- estimations
- selecting appropriate device/equipment
- determining measurement requirements from specifications
- taking accurate measurements for a range of tasks/projects to the finest graduation
- identifying and selecting appropriate methods to perform a range of calculations suitable for the application/task in the manufacturing, engineering and related services industry
- determining or verifying dimensions using basic calculations
- obtaining data from relevant sources and correctly interpret
- documentation typical to the workplace for recording task/project measurements and calculations.

### **Task 25: Materials and components**

All practical projects will require a breakdown of materials and component parts.

A list of materials will outline the amount of material required to manufacture the project, listing quantities for each part. This will assist when converting/cutting stock.

Similarly any component parts, such as fasteners, hinges, etc, must be identified to enable ordering and costing of jobs.

The cutting/material lists are developed from detail drawings.

As students progress through the course these lists may develop from simple written tables to computer spreadsheet documents with allowances for material costs. Teachers are encouraged to utilise industry examples wherever possible and refer to AS1100 where appropriate.

### **Task 26: Job quote**

Fully cost a job/project to develop a formal quote according to industry practice.

Include allowances for:

- world prices
- labour (projected)
- goods and services tax (GST)
- special features (such as surface finishing or heat treatment)
- services (such as installation).

### **Task 27: Charts and graphs**

Application of a minimum of three types of simple charts and/or graphs used in manufacturing, engineering and related services industries.

### **Task 28: Freehand sketches**

Prepare freehand sketches which depict required information for task/project.

It was also suggested that the following tasks may be used for assessment:

- Year 11 half-yearly examination
- Year 11 yearly examination
- Year 12 half-yearly examination
- Year 12 trial examination.

4.6.1 Sample assessment schedule

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28	
	Work placement activities & journal	Newspaper scrapbook	Extended response – Environmental issues	OHS written test	Workplace inspection – risk assessment	PEE, safety devices & emergency equipment	Scenario – dealing with an emergency	Visual communication test	Work order	Extended response – Quality	Written documentation	Work/job plan – individual & team task	Self & peer evaluation	Quality improvement system	Workshop assistant	Workgroup leader	MSDS	Tools, plant & equipment	Technical drawings	Toolbox	Vice/clamping device	Bush BBQ/pizza oven/camp oven	Industry-specific class project	Measurement & calculation exercises	Materials & components	Job quote	Charts & graphs	Freehand sketches	
<b>MEM09002B Interpret technical drawing</b>																													
<i>1 Select correct technical drawing</i>																													
1.1 Drawing is checked and validated against job requirements or equipment	✓											✓								✓	✓	✓	✓	✓	✓				
1.2 Drawing version is checked and validated	✓																			✓	✓	✓	✓	✓	✓				
<i>2 Interpret technical drawing</i>																													
2.1 Components, assemblies or objects are recognised as required	✓											✓								✓	✓	✓	✓	✓	✓	✓			
2.2 Dimensions are identified as appropriate to field of employment	✓											✓								✓	✓	✓	✓	✓	✓				
2.3 Instructions are identified and followed as required	✓											✓								✓	✓	✓	✓	✓	✓				
2.4 Material requirements are identified as required	✓											✓								✓	✓	✓	✓	✓	✓	✓			
2.5 Symbols are recognised in the drawing as appropriate	✓											✓								✓	✓	✓	✓	✓	✓	✓			

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28	
	Work placement activities & journal	Newspaper scrapbook	Extended response – Environmental issues	OHS written test	Workplace inspection – risk assessment	PEE, safety devices & emergency equipment	Scenario – dealing with an emergency	Visual communication test	Work order	Extended response – Quality	Written documentation	Work/job plan – individual & team task	Self & peer evaluation	Quality improvement system	Workshop assistant	Workgroup leader	MSDS	Tools, plant & equipment	Technical drawings	Toolbox	Vice/clamping device	Bush BBQ/pizza oven/camp oven	Industry-specific class project	Measurement & calculation exercises	Materials & components	Job quote	Charts & graphs	Freehand sketches	
<b>MEM12023A Perform engineering measurements</b>																													
<b>1 Select appropriate device or equipment</b>																													
1.1 Measurement requirements are determined from specifications	✓											✓								✓	✓	✓	✓	✓	✓	✓			
1.2 Appropriate device or equipment is selected according to standard operating procedures, to achieve required outcome	✓											✓						✓		✓	✓	✓	✓	✓	✓				
<b>2 Obtain measurements using a range of measuring devices</b>																													
2.1 Correct and appropriate measuring technique is used	✓											✓									✓	✓	✓	✓	✓	✓			
2.2 Measurements are accurately obtained	✓											✓								✓	✓	✓	✓	✓	✓				
2.3 Dimensions are determined or verified using basic calculations, where required	✓											✓								✓	✓	✓	✓	✓	✓				
<b>3 Maintain measuring devices</b>																													
3.1 Routine care and storage of devices is undertaken to manufacturer’s specifications or standard operating procedures	✓		✓									✓			✓	✓		✓		✓	✓	✓	✓	✓					
3.2 Routine adjustments to devices are made and checked	✓											✓			✓	✓		✓		✓	✓	✓	✓	✓					
<b>4 Communicate measurements as required</b>																													
4.1 Measurements are accurately recorded, where required	✓								✓		✓	✓								✓	✓	✓	✓	✓	✓				
4.2 Freehand sketch which depicts required information is prepared, as required	✓								✓		✓	✓								✓	✓	✓	✓	✓	✓			✓	



	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28
	Work placement activities & journal	Newspaper scrapbook	Extended response – Environmental issues	OHS written test	Workplace inspection – risk assessment	PEE, safety devices & emergency equipment	Scenario – dealing with an emergency	Visual communication test	Work order	Extended response – Quality	Written documentation	Work/job plan – individual & team task	Self & peer evaluation	Quality improvement system	Workshop assistant	Workgroup leader	MSDS	Tools, plant & equipment	Technical drawings	Toolbox	Vice/clamping device	Bush BBQ/pizza oven/camp oven	Industry-specific class project	Measurement & calculation exercises	Materials & components	Job quote	Charts & graphs	Freehand sketches
<b>MEM13014A Apply principles of occupational health and safety in the work environment</b>																												
<i>1 Follow safe work practices</i>																												
1.1 Work is carried out safely and in accordance with company policy and procedures and legislative requirements	✓		✓	✓	✓	✓	✓					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1.2 Housekeeping is undertaken in accordance with company procedures	✓		✓	✓		✓							✓		✓	✓	✓			✓	✓	✓	✓					
1.3 Responsibilities and duties of employees are understood and demonstrated in day-to-day actions	✓			✓	✓	✓	✓					✓	✓		✓	✓	✓	✓		✓	✓	✓	✓					
1.4 Personal protective equipment is worn and stored according to company procedures	✓			✓		✓						✓	✓		✓	✓	✓	✓		✓	✓	✓	✓					
1.5 All safety equipment and devices are used according to legislative requirements and company/manufacturers' procedures	✓			✓		✓	✓						✓		✓	✓	✓	✓		✓	✓	✓	✓					
1.6 Safety signs/symbols are identified and followed as per instruction	✓			✓		✓		✓					✓		✓	✓	✓	✓		✓	✓	✓	✓					
1.7 All manual handling is carried out in accordance with legal requirements, company procedures and National Occupational Health & Safety Commission guidelines	✓			✓									✓		✓	✓		✓		✓	✓	✓	✓					
1.8 Emergency equipment is identified and appropriate use is demonstrated	✓			✓		✓	✓						✓					✓										

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28	
<i>2 Report workplace hazards and accidents</i>																													
2.1 Actual and foreseeable workplace hazards are identified during course of work and reported to appropriate person according to standard operating procedures	✓			✓	✓								✓		✓	✓	✓	✓		✓	✓	✓	✓						
2.2 Accidents and incidents are reported according to workplace procedures	✓			✓			✓				✓		✓			✓				✓	✓	✓	✓						
<i>3 Follow emergency procedures</i>																													
3.1 Appropriate personnel and emergency services and means of contacting them in the event of an incident can be identified	✓			✓		✓	✓																						
3.2 Emergency and evacuation procedures are understood and carried out where required	✓			✓		✓	✓				✓																		
3.3 Company evacuation procedures are followed in case of an emergency	✓			✓		✓	✓																						

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28	
	Work placement activities & journal	Newspaper scrapbook	Extended response – Environmental issues	OHS written test	Workplace inspection – risk assessment	PEE, safety devices & emergency equipment	Scenario – dealing with an emergency	Visual communication test	Work order	Extended response – Quality	Written documentation	Work/job plan – individual & team task	Self & peer evaluation	Quality improvement system	Workshop assistant	Workgroup leader	MSDS	Tools, plant & equipment	Technical drawings	Toolbox	Vice/clamping device	Bush BBQ/pizza oven/camp oven	Industry-specific class project	Measurement & calculation exercises	Materials & components	Job quote	Charts & graphs	Freehand sketches	
<b>MEM14004A Plan to undertake a routine task</b>																													
<b>1 Identify task requirements</b>																													
1.1 Instructions and procedures are obtained, understood and where necessary clarified	✓								✓	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓						
1.2 Relevant specifications for task outcomes are obtained, understood and where necessary clarified	✓								✓	✓		✓							✓	✓	✓	✓	✓						
1.3 Task outcomes are identified	✓								✓	✓		✓							✓	✓	✓	✓	✓						
1.4 Task requirements such as completion time and quality measures are identified	✓								✓	✓		✓								✓	✓	✓	✓			✓			
<b>2 Plan steps required to complete task</b>																													
2.1 Based on instructions and specifications provided, the individual steps or activities required to undertake the task are understood and where necessary clarified	✓								✓			✓								✓	✓	✓	✓						
2.2 Sequence of activities is identified	✓								✓			✓								✓	✓	✓	✓						
2.3 Plan is checked to ensure it complies with specifications and task requirements	✓								✓			✓								✓	✓	✓	✓						
<b>3 Review plan</b>																													
3.1 Effectiveness of plan is reviewed against specifications and task requirements	✓											✓	✓						✓	✓	✓	✓	✓						
3.2 If necessary, plan is revised to better meet specifications and task requirements	✓											✓	✓							✓	✓	✓	✓						

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28	
	Work placement activities & journal	Newspaper scrapbook	Extended response – Environmental issues	OHS written test	Workplace inspection – risk assessment	PEE, safety devices & emergency equipment	Scenario – dealing with an emergency	Visual communication test	Work order	Extended response – Quality	Written documentation	Work/job plan – individual & team task	Self & peer evaluation	Quality improvement system	Workshop assistant	Workgroup leader	MSDS	Tools, plant & equipment	Technical drawings	Toolbox	Vice/clamping device	Bush BBQ/pizza oven/camp oven	Industry-specific class project	Measurement & calculation exercises	Materials & components	Job quote	Charts & graphs	Freehand sketches	
<b>MEM15002A Apply quality systems</b>																													
<i>1 Work within a quality system</i>																													
1.1 Instructions and procedures are followed and duties are performed in accordance with requirements of quality improvement system	✓									✓		✓		✓						✓	✓	✓	✓						
1.2 Conformance to specification is ensured	✓													✓						✓	✓	✓	✓						
1.3 Defects are detected and reported according to standard operating procedures	✓												✓	✓						✓	✓	✓	✓						
1.4 Performance of operation or quality of product or service is monitored to ensure customer satisfaction	✓									✓			✓	✓						✓	✓	✓	✓						
<i>2 Engage in quality improvement</i>																													
2.1 Current performance is assessed	✓									✓			✓	✓						✓	✓	✓	✓						
2.2 Established performance measures are identified	✓									✓		✓		✓						✓	✓	✓	✓						
2.3 Specifications and standard operating procedures are identified	✓								✓			✓		✓						✓	✓	✓	✓						
2.4 Defects are detected and reported according to standard operating procedures	✓												✓	✓						✓	✓	✓	✓						
2.5 Process improvement procedures are participated in	✓									✓			✓	✓						✓	✓	✓	✓						
2.6 The improvement of internal/external customer/supplier relationships are participated in	✓									✓			✓	✓						✓	✓	✓	✓						
2.7 Performance of operation or quality product or service is monitored to ensure customer satisfaction	✓									✓			✓	✓						✓	✓	✓	✓						

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28	
	Work placement activities & journal	Newspaper scrapbook	Extended response – Environmental issues	OHS written test	Workplace inspection – risk assessment	PEE, safety devices & emergency equipment	Scenario – dealing with an emergency	Visual communication test	Work order	Extended response – Quality	Written documentation	Work/job plan – individual & team task	Self & peer evaluation	Quality improvement system	Workshop assistant	Workgroup leader	MSDS	Tools, plant & equipment	Technical drawings	Toolbox	Vice/clamping device	Bush BBQ/pizza oven/camp oven	Industry-specific class project	Measurement & calculation exercises	Materials & components	Job quote	Charts & graphs	Freehand sketches	
<b>MEM15024A Apply quality procedures</b>																													
<i>1 Take responsibility for own quality</i>																													
1.1	Concept of supplying product or service to meet customer requirements (internal or external) is understood and applied	✓								✓		✓								✓	✓	✓	✓						
1.2	Responsibility is taken for quality of own work	✓								✓										✓	✓	✓	✓						
<i>2 Apply standard procedures of workplace quality to own job</i>																													
2.1	Quality system procedures are followed	✓								✓				✓						✓	✓	✓	✓						
2.2	Conformance to specifications is ensured	✓								✓										✓	✓	✓	✓						

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28	
	Work placement activities & journal	Newspaper scrapbook	Extended response – Environmental issues	OHS written test	Workplace inspection – risk assessment	PEE, safety devices & emergency equipment	Scenario – dealing with an emergency	Visual communication test	Work order	Extended response – Quality	Written documentation	Work/job plan – individual & team task	Self & peer evaluation	Quality improvement system	Workshop assistant	Workgroup leader	MSDS	Tools, plant & equipment	Technical drawings	Toolbox	Vice/clamping device	Bush BBQ/pizza oven/camp oven	Industry-specific class project	Measurement & calculation exercises	Materials & components	Job quote	Charts & graphs	Freehand sketches	
<b>MEM16007A Work with others in a manufacturing, engineering or related environment</b>																													
<i>1 Identify roles and responsibilities</i>																													
1.1 Own role and responsibilities are identified	✓						✓			✓		✓			✓	✓				✓	✓	✓	✓						
1.2 Relationships with immediate group and with employees performing related/interdependent activities are identified	✓						✓			✓		✓			✓	✓				✓	✓	✓	✓						
<i>2 Plan activities</i>																													
2.1 Common goals, objectives and task requirements are identified and clarified with appropriate persons	✓				✓				✓			✓			✓	✓				✓	✓	✓	✓						
2.2 Individual tasks are determined and agreed on according to workplace procedures	✓											✓			✓	✓				✓	✓	✓	✓						
<i>3 Work with others</i>																													
3.1 Effective interpersonal skills are applied to interact with others and to contribute to activities and objectives	✓						✓								✓	✓	✓	✓		✓	✓	✓	✓						
3.2 Assigned and agreed tasks are performed in accordance with agreed requirements, specifications and workplace procedures	✓						✓							✓	✓	✓				✓	✓	✓	✓						
3.3 Work progress is reviewed and modified as agreed to complement the work of others	✓											✓			✓	✓				✓	✓	✓	✓						
3.4 Agreed reporting lines are followed using standard operating procedures	✓						✓					✓			✓	✓				✓	✓	✓	✓						



	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 13	Task 14	Task 15	Task 16	Task 17	Task 18	Task 19	Task 20	Task 21	Task 22	Task 23	Task 24	Task 25	Task 26	Task 27	Task 28	
	Work placement activities & journal	Newspaper scrapbook	Extended response – Environmental issues	OHS written test	Workplace inspection – risk assessment	PEE, safety devices & emergency equipment	Scenario – dealing with an emergency	Visual communication test	Work order	Extended response – Quality	Written documentation	Work/job plan – individual & team task	Self & peer evaluation	Quality improvement system	Workshop assistant	Workgroup leader	MSDS	Tools, plant & equipment	Technical drawings	Toolbox	Vice/clamping device	Bush BBQ/pizza oven/camp oven	Industry-specific class project	Measurement & calculation exercises	Materials & components	Job quote	Charts & graphs	Freehand sketches	
<b>MEM18002B Use power tools/hand held operations</b>																													
<i>1 Use power tools</i>																													
1.1 Power tools are selected appropriate to the task requirements	✓											✓						✓		✓	✓	✓	✓						
1.2 Power tools are used for a determined sequence of operations – which may include clamping, alignment and adjustment to produce desired outcomes – to job specifications which may include finish, size or shape	✓																	✓		✓	✓	✓	✓						
1.3 All safety requirements are adhered to before, during and after use	✓			✓	✓	✓		✓							✓	✓		✓		✓	✓	✓	✓						
1.4 Unsafe or faulty tools are identified and marked for repair before, during and after use according to designated procedures	✓			✓	✓											✓		✓		✓	✓	✓	✓						
1.5 Operational maintenance of tools, including hand sharpening, is undertaken according to standard workplace procedures, principles and techniques.	✓		✓												✓	✓		✓		✓	✓	✓	✓						
1.6 Power tools are stored safely in appropriate location according to standard operating procedures and manufacturers' recommendations	✓														✓	✓		✓		✓	✓	✓	✓						

## **4.7 The HSC Examination**

The HSC examination:

- is independent of the competency-based assessment requirements for AQF VET qualifications
- is optional for students of Metal and Engineering (240 indicative hours) and is intended for Universities Admission Index (UAI) purposes only
- is a two-hour written paper.

### **4.7.1 Internal examinations**

Teachers and trainers need to be aware that students enrolled in Metal and Engineering (240 indicative hours) may elect to undertake the optional written HSC examination. These students should have the opportunity to practise appropriate written tasks under examination conditions. As far as possible internal examinations set for this purpose should reflect the specifications and conditions of the HSC examination.

For this reason, it is highly recommended that students undertake at least a trial HSC examination.

Schools must provide an estimated examination mark for all students entered for the optional HSC examination. This mark will be an estimate of likely performance in the Higher School Certificate examination and will be used only in the case of a successful illness/misadventure appeal.

Note that a trial HSC or other written internal examination may also be used as a source of evidence of competency in some units and elements of competency and may therefore contribute to the competency-based assessment program.