



Australian Government

Department of Education, Employment and Workplace Relations

TAELLN702A Analyse and apply adult numeracy teaching practices

Revision Number: 1

TAELLN702A Analyse and apply adult numeracy teaching practices

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes, skills and knowledge required to analyse and apply effective adult numeracy teaching practices to meet the needs of those participating in numeracy provision in vocational education and training (VET) contexts.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.</p>
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Application of the Unit

<p>Application of the unit</p>	<p>This unit applies to practitioners working to develop or support the development of numeracy skills and knowledge.</p> <p>Adult numeracy is offered in stand-alone courses, or integrated into programs with an adult English language, literacy or general education focus. Adult numeracy is also delivered to individuals or groups in vocational training, and in the workplace.</p> <p>While most adult literacy and language course delivery will be at Australian Core Skills Framework (ACSF) levels 1 to 3, applications of numeracy in vocational contexts and within the community can often require ACSF level 4 or level 5 skills. An adult numeracy practitioner therefore requires skills and knowledge to deliver numeracy at a minimum of ACSF level 3.</p> <p>This unit aims to equip practitioners to analyse and apply numeracy teaching practices to a minimum of ACSF level 3. Numeracy teachers need to be aware of the limitations of their own mathematical skills and knowledge and may need to seek the assistance of a mathematics or technical specialist. They may also need to undertake professional development to increase their own skill levels for teaching contexts requiring numeracy beyond ACSF level 3.</p> <p>The skills and knowledge needed to provide adult numeracy skills are covered in TAELLN704A Implement and evaluate delivery of adult language, literacy and numeracy skills.</p>
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	
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Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Analyse and apply conceptual frameworks underpinning numeracy teaching	1.1. Examine theories that inform adult numeracy teaching and their application 1.2. Identify relevant frameworks and structures 1.3. Apply <i>adult learning principles</i> to teaching numeracy 1.4. Identify and review <i>range of provision</i> for learning numeracy in VET contexts
2. Research numeracy requirements of those participating in numeracy provision	2.1. Identify <i>diversity</i> of skills and backgrounds of those participating in numeracy provision 2.2. Identify range of <i>learning goals</i> of those participating in numeracy provision 2.3. Identify numeracy embedded in everyday life, training and workplace tasks 2.4. <i>Research the mathematical knowledge</i> required to meet the needs of the numeracy provision 2.5. Review own <i>mathematical skills and knowledge</i> in relation to required skills and knowledge and seek assistance of mathematics or technical specialist where required
3. Select from a range of teaching approaches to develop participants' numeracy skills and knowledge	3.1. Evaluate <i>teaching approaches</i> that identify mathematical information and meaning in authentic and relevant contexts and teach mathematical terminology and language 3.2. Evaluate teaching approaches that incorporate reasoning, problem-solving and estimation activities 3.3. Determine the applicability of different teaching approaches to specific needs, levels of numeracy, learning styles, and context of those participating in numeracy provision 3.4. Refer any <i>issues arising from numeracy teaching role</i> to <i>appropriate person(s)</i>
4. Select from a range of learning resources to develop participants' numeracy skills and knowledge	4.1. Examine <i>learning resources</i> from traditional and new and emerging technologies, that link to numeracy learning outcomes and promote learner engagement with tasks and activities 4.2. Evaluate materials relevant to social and cultural needs of those participating in numeracy provision
5. Apply and evaluate strategies for teaching	5.1. Devise activities that integrate literacy skills appropriate to specific needs and context of those participating in numeracy provision

ELEMENT	PERFORMANCE CRITERIA
mathematical skills and knowledge	5.2. Review and apply strategies to teach number, measurement, space and location, and data and statistics, appropriate to identified knowledge and <i>level of difficulty</i> 5.3. Examine and apply strategies to develop learning skills 5.4. Use formal and informal monitoring to evaluate effectiveness of teaching strategies

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analysis and interpretation skills to:
 - evaluate a number of theories and teaching approaches in relation to those participating in numeracy provision
 - identify and analyse numeracy embedded in selected contexts
 - interpret information from pre-training assessments to identify and respond to learner needs, goals, skills and learning styles
- communication skills to:
 - facilitate discussions to encourage sharing of strategies and exploration of different solutions to problems
 - give clear explanations, present concepts clearly and respond to questions effectively
 - vary teacher talk to adjust to the English language level of others
- computer skills to teach:
 - software packages, such as numeracy-specific educational programs and spreadsheets
 - skills needed to use email, SMS messaging and the internet
- initiative, enterprise and creativity to:
 - devise, select and vary teaching strategies
 - interpret numeracy theories in light of current practices
 - seek appropriate resources and materials
- learning skills to maintain currency and relevance of knowledge
- literacy skills to:
 - analyse texts for teaching and learning purposes
 - read and interpret complex texts, analyse theoretical viewpoints and form judgements
 - research current approaches to numeracy teaching
 - write complex texts that meet audience needs
- numeracy skills to:
 - communicate using formal and informal language, symbolic and diagrammatic representations, and conventions of mathematics
 - identify mathematical information and meaning in activities and texts
 - solve a range of numeracy problems within adult contexts
- planning and organising skills to:
 - identify relevant resources
 - monitor and evaluate participant progress

REQUIRED SKILLS AND KNOWLEDGE

- plan a sequence of learning activities consistent with a conceptual framework
- problem-solving skills to:
 - analyse, identify and develop strategies to meet identified challenges
 - identify specific difficulties of those participating in numeracy provision
- self-management skills to maintain evidence of performance for a portfolio

Required knowledge

- adult learning principles and practices as they apply to teaching numeracy
- diverse needs of those participating in numeracy provision and learning resources to support them
- formal and informal mathematical and general language, including some specialised mathematical language and terminology
- national standards, such as:
 - accredited course documentation
 - ACSF
 - Australian Qualifications Framework (AQF)
 - Australian Quality Training Framework (AQTF)
 - Training Packages
- mathematical knowledge as required for teaching purposes (minimum ACSF level 3):
 - data and statistics
 - measurement
 - quantity and number
 - space and location
- mathematical knowledge to analyse and articulate a problem at ACSF levels 4 and 5, including to:
 - identify which operations are necessary
 - give possible approaches without necessarily being able to successfully solve the problem
- range of numeracy provision in VET, including higher level mathematics provision
- role that mathematics plays in conveying information, for example:
 - critical appreciation of the place of mathematics in society
 - interplay between mathematics, language, context and the political, social and cultural contexts within which the mathematics arises
- relationship of teaching practice to theories that inform adult numeracy teaching, such as:
 - applied social theory, for example mathematics and culture, mathematics and gender
 - constructivism
 - critical literacy and numeracy

REQUIRED SKILLS AND KNOWLEDGE

- cultural use of specific mathematics
- functionalism
- variables that interact to determine the level of difficulty of numeracy tasks:
 - complexity of mathematical information or data
 - type of operation or skill
 - expected number of operations
 - kind of information included, for example how relevant it is to the task
 - type of match / problem transparency

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the ability to:

- analyse frameworks, theories and teaching approaches that underpin the teaching of adult numeracy, demonstrating a significant depth of knowledge, which has been applied to analyse the numeracy needs of those participating in numeracy provision
- select appropriate learning resources
- select and apply adult numeracy teaching strategies appropriate to learner needs and delivery context
- evaluate effectiveness of teaching strategies.

Context of and specific resources for assessment

Assessment must ensure access to:

- a suitable workplace environment
- research about profiles of those participating in numeracy provision
- wide range of resources about adult numeracy theories and approaches
- resources to support numeracy teaching.

Assessment must also ensure the use of culturally appropriate processes, and techniques appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

Method of assessment

A range of appropriate assessment methods should be used to determine competency. The following examples are appropriate for this unit:

- direct observation or video recording of candidate's language, literacy and numeracy practice
- evaluation of a portfolio of evidence comprising:
 - learner responses and feedback
 - personal reflections
 - planning notes
 - preparation, such as detailed session plans, learning activities and assessment tools
 - samples of resources
- review of work samples, which may include session plans, units

EVIDENCE GUIDE	
	<p>of work, resources, assessment tasks, evaluations, and other work documents</p> <ul style="list-style-type: none"> • questioning to establish required knowledge • review of third-party reports.
Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> • TAELLN701A Analyse and apply adult literacy teaching practices • TAELLN704A Implement and evaluate delivery of adult language, literacy and numeracy skills.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><i>Adult learning principles</i> may include:</p>	<ul style="list-style-type: none"> • acknowledging impact of cultural differences and attitudes on learner autonomy • assisting learners with a fear of mathematics or numeracy to overcome that anxiety • assisting learners to assume increasing responsibility for defining their learning objectives, planning their learning and evaluating their progress • assisting learners to use learning resources, including new technologies • creating a supportive environment to encourage efforts to change and to take risks with new numeracy learning • encouraging learners to draw on their life experience and world knowledge to make meaning from numbers • encouraging learners to reflect on ways numeracy skills can empower • explaining mathematical theories and concepts by linking to learners' existing knowledge • reinforcing learners' view of themselves as learners and doers, by providing for progressive mastery • selecting tasks and content in learning resources appropriate to adult learners • supporting learners to make links between the development of their numeracy skills and other areas of importance to them • using experiential, participative and project-based instructional methods.
<p><i>Range of provision</i> may include:</p>	<ul style="list-style-type: none"> • community programs integrating numeracy into activities • numeracy integrated into financial literacy or money management programs • numeracy integrated into other VET programs • numeracy integrated into workplace activities, for example in Workplace English Language and Literacy (WELL) programs • stand-alone adult numeracy classes, or those integrated

RANGE STATEMENT	
	<p>into literacy classes</p> <ul style="list-style-type: none"> • tuition from teachers of higher level mathematics.
<i>Diversity</i> may include:	<ul style="list-style-type: none"> • individual characteristics, for example: <ul style="list-style-type: none"> • culturally and linguistically diverse backgrounds with differing experiences of learning mathematics • low levels of formal schooling • physical, intellectual, learning or socio-emotional disabilities that impact on learning • 'spiky profiles', where numeracy skill levels are different from literacy or oral communication skill levels • effects of socioeconomic factors • where skills in numeracy limit ability to achieve goals • range in individual's numeracy skills in relation to established frameworks such as ACSF, Training Package requirements and accredited course levels • range of motivation that leads adults to seek numeracy provision.
<i>Learning goals</i> may include:	<ul style="list-style-type: none"> • completing equivalent to compulsory schooling in Australia • completing VET course • gaining employment • improving ability to make informed financial decisions and interact with financial institutions • interacting with family and community • maintaining current job or managing promotion to next level • pursuing own interests.
<i>Researching the required mathematical knowledge</i> may include:	<ul style="list-style-type: none"> • analysing tasks and texts for teaching and learning purposes to establish the required numeracy skills • analysing tasks and texts to identify their level of difficulty • examining mathematical terminology • interpreting requirements of training products and texts in wider use.
<i>Mathematical skills and knowledge</i> may include:	<ul style="list-style-type: none"> • data and statistics: <ul style="list-style-type: none"> • gathering and organising data • interpreting and presenting data • understanding everyday probability and chance events and terminology

RANGE STATEMENT	
	<ul style="list-style-type: none"> • measurement: <ul style="list-style-type: none"> • length, mass (weight), volume, temperature and time • estimating, measuring and comparing objects using formal and informal methods • recognising and identifying relationships between attributes • selecting and using appropriate units of metric measurement • number: <ul style="list-style-type: none"> • counting and numeration, including place value • whole numbers, fractions, decimals and percentages • computation and applying number • computation and estimation • identifying number patterns and relationships • simple ratio and scale • space and location: <ul style="list-style-type: none"> • recognising and identifying shapes and objects • symmetry relevant to common shapes • reading and interpreting location in relation to maps and street directories • calculating simple area, perimeter and simple angles of different shapes.
<i>Teaching approaches</i> may include:	<ul style="list-style-type: none"> • a range of classroom activities delivered: <ul style="list-style-type: none"> • to individuals • in small groups • to a whole group • bilingual approaches or peer support where individuals have low levels of English language • drawing on range of supports to learning, such as assistive technology • encouraging use of own life experiences to illustrate and clarify learning • modelling numeracy operations • projects and investigations • referring to other educational and community services for support, including for higher level mathematics • sequencing activities to reflect increasing level of skill development • using a variety of learning modalities, including: <ul style="list-style-type: none"> • visual

RANGE STATEMENT	
	<ul style="list-style-type: none"> • kinaesthetic • sensory • using a variety of learning resources, including: <ul style="list-style-type: none"> • games • hands-on activities • real-life materials • visual materials • using strategies to overcome the effects of numeracy and number anxiety • verbal-based approaches, such as discussions and 'questions and answers' to explore, plan, generalise, hypothesise, test ideas and form conclusions • verbalising processes to establish linkages between language of mathematics and operations, symbols and key words.
<i>Issues arising from numeracy teaching role</i> may include:	<ul style="list-style-type: none"> • areas that involve higher level mathematical skills and knowledge (at or above ACSF level 4) • knowledge of application of numeracy in particular contexts, such as a particular workplace or vocational application.
<i>Appropriate persons</i> may include:	<ul style="list-style-type: none"> • those with higher level mathematical knowledge • those with knowledge of specific applications • those who use numerical information for other purposes, such as workplace supervisor managing and reporting on outputs.
<i>Learning resources</i> may include:	<ul style="list-style-type: none"> • bilingual and multicultural resources • calculators, graphic calculators and abacus • computer-based delivery, software applications, educational software and CDs • everyday household and realia / authentic materials, for example: <ul style="list-style-type: none"> • newspapers and magazines • utility bills, bank statements and information leaflets • shopping and advertising materials • goods and materials, including foodstuff, packaging and containers • domestic measuring equipment, such as scales, cups, builder and dressmaker tapes, clocks, watches and calendars • local maps, plans and street directories • online resources, including websites

RANGE STATEMENT	
	<ul style="list-style-type: none"> • resources drawn from a workplace or vocational environment • technology used in everyday life, such as: <ul style="list-style-type: none"> • automated teller machines (ATMs) and EFTPOS • ticket machines • internet and telephone banking.
<i>Levels of difficulty</i> include:	<ul style="list-style-type: none"> • analysing variables that underpin numeracy tasks, such as: <ul style="list-style-type: none"> • complexity of mathematical information • type of operation or skill • expected number of operations • kind of information included, for example how relevant it is to the task • type of match / problem transparency • drawing on sample activities from levels 1 to 3 of the ACSF.

Unit Sector(s)

Unit sector	
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Competency field

Competency field	Language, literacy and numeracy practice
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co-requisite skills

Co-requisite skills	
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