



# EDCU20037 Numeracy Learning

## Term 1 - 2023

Profile information current as at 24/04/2024 12:15 am

All details in this unit profile for EDCU20037 have been officially approved by CQU University and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

### General Information

#### Overview

Quality experiences and effective learning and teaching interactions are central to the development of children's confident and purposeful use of Mathematical knowledge and skills in a wide range of situations. In this unit, you will develop knowledge of evidence-based pedagogical approaches that enhance the conceptual understanding and numerate thinking of children in early years and primary school settings. You will apply this knowledge to the analysis and evaluation of resources and teaching practices and devise modifications or improvements that enhance their impact on children's proficiency in Mathematics. Special emphasis is given to the progression from concrete hands-on activities to symbolic and abstract representation of the four basic operations. In addition, this unit will provide opportunities for you to extend and refine your own Mathematical knowledge and confidence and reflect on your professional learning needs in relation to the effective teaching of Mathematics in early childhood education and care, and primary school settings.

#### Details

Career Level: *Postgraduate*

Unit Level: *Level 8*

Credit Points: 6

Student Contribution Band: 7

Fraction of Full-Time Student Load: 0.125

#### Pre-requisites or Co-requisites

There are no requisites for this unit.

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

#### Offerings For Term 1 - 2023

- Online

#### Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

#### Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

## Class and Assessment Overview

### Recommended Student Time Commitment

Each 6-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

### Class Timetable

#### [Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

#### [Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

### Assessment Overview

#### 1. **Written Assessment**

Weighting: 50%

#### 2. **Online Test**

Weighting: 50%

### Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

## CQUniversity Policies

**All University policies are available on the [CQUniversity Policy site](#).**

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

## Previous Student Feedback

### Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

#### Feedback from Student unit evaluations

##### **Feedback**

More consistency between the writing standards (paragraph spacing and font size requirements) is required. This would help streamline expectations.

##### **Recommendation**

Students are encouraged to make use of the ALC APA Formatting Guidelines. Utilising this same document across the faculty would help to streamline expectations.

## Unit Learning Outcomes

### **On successful completion of this unit, you will be able to:**

1. Evaluate strategies and resources for teaching mathematical understanding and the purposeful application of numeracy in a range of learning contexts and situations
2. Identify, select and use teaching and learning strategies and resources that build on and support the development of learners' numeracy skills including mathematical applications and problem solving
3. Identify appropriate strategies for gathering information and making judgments about students' numeracy development
4. Assess and develop personal numeracy skills
5. Reflect on personal numeracy competence to describe ways in which professional learning for teachers contributes to effective teaching practice and improved student learning outcomes.

Successful completion of this unit provides opportunities for students to demonstrate the Australian Professional Standards for Teachers focus areas of:

#### **1.2 Understand how students learn**

#### **2.1 Content and teaching strategies of the teaching area**

#### **2.2 Content selection and organisation**

#### **2.5 Literacy and numeracy strategies**

#### **3.3 Use teaching strategies**

#### **3.4 Select and use resources**

#### **3.6 Evaluate and improve teaching programs**

#### **5.1 Assess student learning**

#### **6.1 Identify and plan professional learning needs**

#### **6.2 Engage in professional learning and improve practice**

#### **6.4 Apply professional learning and improve student learning**

## Alignment of Learning Outcomes, Assessment and Graduate Attributes

 N/A Level	 Introductory Level	 Intermediate Level	 Graduate Level	 Professional Level	 Advanced Level
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### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	3	4	5	
1 - Written Assessment - 50%	•	•	•		
2 - Online Test - 50%				•	•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	3	4	5	
1 - Knowledge	○	○	○	○	○
2 - Communication	○	○	○		○
3 - Cognitive, technical and creative skills		○	○		
4 - Research	○				○
5 - Self-management	○			○	○
6 - Ethical and Professional Responsibility					○
7 - Leadership					
8 - Aboriginal and Torres Strait Islander Cultures					

## Textbooks and Resources

### Textbooks

EDCU20037

#### Prescribed

##### Teaching Primary Mathematics

Edition: 6th (2020)

Authors: George Booker, Denise Bond, Rebecca Seah

Pearson

Australia

ISBN: 9781488615597

Binding: Paperback

#### Additional Textbook Information

If you prefer your own copy, you can purchase one at the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code)

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

#### You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

## Referencing Style

All submissions for this unit must use the referencing style: [American Psychological Association 7th Edition \(APA 7th edition\)](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Sandra Wass** Unit Coordinator

[s.j.wass@cqu.edu.au](mailto:s.j.wass@cqu.edu.au)

## Schedule

### Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Defining numeracy Approaches to teaching and learning mathematics - building confidence, proficiency and understanding The importance of mathematical language to describe thinking processes	Chapter 1- Approaches to mathematics teaching and learning	

### Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Numeration - whole numbers Establishing the foundations of numeracy in the early years	Chapter 3 - Numeration for whole numbers	

### Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Numeration - fractions and decimals	Chapter 6 - Numeration for fraction ideas	
<b>Week 4 - 27 Mar 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Additive thinking Moving from concrete to abstract in the conceptual development of mathematical concepts	Chapter 4 - Computation: additive thinking (pp.184-250)	
<b>Week 5 - 03 Apr 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Developing thinking for subtraction	Chapter 4 - Computation: additive thinking (pp.234-265)	
<b>Vacation Week - 10 Apr 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
		Assessment Task 1 Due for Submission 11:59pm 12/04/2023  <b>Critical analysis of numeracy teaching strategies and learning activities.</b> Due: Vacation Week Wednesday (12 Apr 2023) 11:59 pm AEST
<b>Week 6 - 17 Apr 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Multiplicative thinking	Chapter 5 - Computation: multiplicative thinking (pp. 253-300)	On-line quiz 1
<b>Week 7 - 24 Apr 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Developing thinking for division	Chapter 5 - Computation: multiplicative thinking (pp. 300-343)	On-line quiz 2
<b>Week 8 - 01 May 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Algebra and algebraic thinking	Chapter 7- Algebra and algebraic thinking	On-line quiz 3
<b>Week 9 - 08 May 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Problem solving - Real world applications of mathematical thinking	Chapter 2- Problem solving	On-line quiz 4
<b>Week 10 - 15 May 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Mental computation strategies	See Moodle site for Curriculum Resource Online (CRO) link	On-line quiz 5
<b>Week 11 - 22 May 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Teaching for meaning - Estimation and calculators	Chapter 11 - Teaching for meaning - connecting ideas across mathematics	
<b>Week 12 - 29 May 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic

Personal numeracy competency - the impact of professional learning on attitudes, teaching practice and student learning in Mathematics

Assessment Task 2  
Personal Learning Plan and Reflection  
Submission  
11:59pm Wednesday May 31st 2023

**Personal numeracy learning plan and reflection** Due: Week 12  
Wednesday (31 May 2023) 11:59 pm  
AEST

### Review/Exam Week - 05 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
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### Exam Week - 12 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
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## Assessment Tasks

### 1 Critical analysis of numeracy teaching strategies and learning activities.

#### Assessment Type

Written Assessment

#### Task Description

**Task Rationale:** A plethora of teaching and learning resources are available for teachers to use in the design of their lessons. Choosing appropriate activities and resources that align with current literature and research-based best practice in teaching and learning numeracy is a professional responsibility and integral to preparation for teaching.

**Task details:** In this task you are required to write a report that critically examines three teaching videos (available from Moodle Assessment Task 1 Description) to decide whether they are consistent with current approaches to teaching and learning numeracy. Your report should provide a literature-based justification of your decision.

#### To complete the task you will need to:

1. View the three (3) teaching videos and briefly describe the mathematics concept, numeracy learning and pedagogical strategy/strategies that are evident.
2. Investigate the mathematics topic for each video using the following questions as a guide:

- Which elements and sub-elements of the National Numeracy Learning Progression does each video scaffold?
- How does the focus knowledge and skills of each video support conceptual understanding of one or more of the four basic operations of addition, subtraction, multiplication and division?
- What is the sequence for developing an understanding of the topic? What approach does the literature advocate for teaching the topic?
- What are the common learning issues reported in the literature? What are the implications for designing experiences that scaffold prior knowledge of this topic in early years contexts?

3. Using your responses to the questions in Step 2, construct a set of criteria with which you can critique and compare each video strategy to the teaching approach/s advocated in authoritative literature sources for developing an understanding of one of the four operations.

4. Using your criteria, decide whether the strategies are consistent with current approaches to mathematics teaching and learning, and how students learn and justify your decision using authoritative literature sources.

5. Choose **one** video and use your critique to develop a lesson plan exemplar. Your plan must include strategies to check for student understanding of the stated learning goals and include annotations that (a) identify the mathematical vocabulary that would be used to scaffold children's mathematical understanding of numeracy development; (b) justify your teaching strategy choice/s, sequencing decisions and selection of resources, to provide evidence of how the teaching plan has been improved or enhanced; and (c) explain how your checks for learning provide you with information about students' achievement of the learning goal as input for next steps teaching.

#### Your assessment task submission should use a report presentation style and include:

- a) Abstract (100 - 150 words)
- b) Table of contents
- c) Introduction (100 - 150 words)
- d) Description of the three mathematics strategies (300 - 360 words; i.e. 100-120 words per video)
- e) Investigation of the mathematics topic each video addresses (450 - 600 words; i.e. 150 - 200 words per video)
- f) Critique and justification of decision regarding the three mathematics strategies (600 - 690 words; i.e. 200 - 230 words per video)

g) Conclusion (150 - 200 words)

h) References

i) Appendices - Lesson plan with annotations

**(N.B. \*Number of words for each part is a guide only)**

**Word count: 2000 words maximum**

WORD COUNT for written assignments:

The word count is considered from the first word of the introduction to the last word of the conclusion. It excludes the cover page, abstract, contents page, reference page and appendices. It includes in-text references and direct quotations.

### **Assessment Due Date**

Vacation Week Wednesday (12 Apr 2023) 11:59 pm AEST

This task is to be uploaded as a single Word file document to Moodle saved in the following format: EDCU20037\_Last name\_First name\_Task 1

### **Return Date to Students**

Tasks will be returned at the conclusion of the moderation process

### **Weighting**

50%

### **Minimum mark or grade**

Pass

### **Assessment Criteria**

#### **Assessment Criteria**

Assessment will be marked against the following criteria:

- Knowledge and understanding of the learning progression and evidence-based approaches to teaching Mathematics content
- Understanding of how students learn Mathematics and the impact of stages of development and student characteristics on numeracy learning and development
- Ability to analyse and evaluate teaching and learning activities to improve student learning
- Ability to organise content and select teaching strategies and resources that support numeracy and mathematical understanding
- Planning that includes strategies for monitoring student progress and learning as input for making next steps teaching decisions
- Communication and referencing

#### **Learning Outcomes Assessed**

1. Evaluate strategies and resources for teaching mathematical understanding and the purposeful application of numeracy in a range of learning contexts and situations.
2. Identify, select and use teaching and learning strategies and resources that build on and support the development of learners' numeracy skills including mathematical applications and problem-solving.
3. Identify appropriate strategies for gathering information and making judgments about students' numeracy development.

#### **Australian Professional Standards for Teachers addressed in this task**

1.2, 2.1, 2.2, 2.5, 3.3, 3.4, 3.6, 5.1, 6.2

Communication and referencing

***N.B. The full assessment criteria and standards rubric is located in the Assessment block on the Moodle site for this Unit.***

### **Referencing Style**

- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

### **Submission**

Online

### **Submission Instructions**

This task is to be uploaded as a single Word file document to Moodle saved in the following format: EDCU20037\_Last name\_First name\_Task 1

### **Learning Outcomes Assessed**

- Evaluate strategies and resources for teaching mathematical understanding and the purposeful application of numeracy in a range of learning contexts and situations
- Identify, select and use teaching and learning strategies and resources that build on and support the



- development of learners' numeracy skills including mathematical applications and problem solving
- Identify appropriate strategies for gathering information and making judgments about students' numeracy development

## 2 Personal numeracy learning plan and reflection

### Assessment Type

Online Test

### Task Description

This task comprises two parts:

1. **Five on-line quizzes** that are completed each week from week 6 to week 10. Each quiz comprises ten randomly selected questions to be completed in 30 minutes. Quiz questions are based on numeracy concepts aligned with the Australian Core Skills Framework levels 1-5 (25% weighting)
2. **Personal numeracy learning plan and reflection** (25% weighting)

#### 1. Details about the five online quizzes:

- 1 attempt only at each quiz.
- 10 questions per quiz
- 1 mark per question
- 30 minutes to complete each quiz.

Each weekly quiz will be open for 6 days of the week only (i.e Week 6 quiz will be open from **Monday** of Week 6 through to **Saturday** of Week 6)

Once you complete the quiz and submit, your overall score only will be available. Solutions will be released once the quiz has closed for that week. You are not able to go back in and attempt the quiz again.

Your responses for each quiz will be recorded and contribute **25%** to your overall grade.

#### 2. Personal numeracy learning plan and reflection

You are to write a 1000 word (maximum) reflective statement outlining your strengths and challenges with respect to your personal numeracy competency, a professional learning plan to address the challenges identified and the implications for student learning.

This reflective statement must include:

- a) Your numeracy strengths and challenges as identified through **self-reflection** and **on-line quiz** performance.
- b) A personal plan for professional learning **outlining** both short term and long term goals, and the professional learning resources you plan to draw on to support your acquisition of the mathematical knowledge, understanding and skills required for effective and accurate description of mathematical ideas that support children's numeracy development.
- c) A **justification** for your plan that links to (a) scholarly literature; and (b) the development of professional knowledge and practice for teaching Mathematics using selected focus areas of the Australian Professional Standards for Teachers\*.
- d) A **preliminary evaluation** of the effectiveness of the plan for your short term goals, and an **informed reflection** on the relationship between professional learning, improved practice and improved student learning in Mathematics in early childhood and primary schooling contexts.

\*A full copy of the AITSL Professional Standards for Australian Teachers is available at:

<http://www.aitsl.edu.au/australian-professional-standards-for-teachers>

### Assessment Due Date

Week 12 Wednesday (31 May 2023) 11:59 pm AEST

Report must be uploaded as a single Word file document to Moodle saved in the following format: EDCU20037\_Last name\_First name\_Task 2

### Return Date to Students

Marked tasks are returned at the conclusion of moderation.

### Weighting

50%

### Minimum mark or grade

You must achieve a pass standard in this task to be eligible to pass this Unit.

### Assessment Criteria

#### Assessment Criteria

Assessment will be marked against the following criteria:

- Knowledge and understanding of the content, substance and numeracy demands of primary school Mathematics
- Use of Standards frameworks to identify professional learning needs
- Understanding of the relevant and appropriate sources of professional learning for teachers
- Critical reflection on the personal competence as the basis for a rationale for continued professional learning and improved student learning

### Learning Outcomes Assessed

4. Assess and develop personal numeracy skills.

5. Reflect on personal numeracy competence and professional learning to describe processes and strategies that improve teaching practice and student learning.

**Australian Professional Standards for Teachers addressed in this task**

2.1, 6.1, 6.2, 6.4

**Referencing Style**

- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

**Submission**

Online

**Submission Instructions**

Report must be uploaded as a single Word file document to Moodle saved in the following format: EDCU20037\_Last name\_First name\_Task 2

**Learning Outcomes Assessed**

- Assess and develop personal numeracy skills
- Reflect on personal numeracy competence to describe ways in which professional learning for teachers contributes to effective teaching practice and improved student learning outcomes.

## Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

### What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

### Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

### Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

### What can you do to act with integrity?



#### Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



#### Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



#### Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem