

Unit Outline (Higher Education)

Institute / School:	Institute of Education, Arts & Community
Unit Title:	MATHEMATICS, NUMERACY AND LEARNER ENGAGEMENT 1
Unit ID:	EDMAS6039
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	(EDFGC5713)
ASCED:	070103

Description of the Unit:

This course is designed to engage students in critical readings on current research and practice in numeracy education, and practical learning strategies so they can implement effective student learning in different mathematical topics. There is an emphasis on students interrogating their understanding and honing their skills in facilitating children's learning in a variety of sociocultural and educational contexts. Students use and apply learning technologies that cater for diverse learners, and mixed abilities. These activities are informed by current educational policy and curriculum, both locally and internationally. Pre-service teachers will develop skills in academic and personal communication, self-reflection, personal learning, delivering and responding to peer feedback

This course will run over 15 weeks with a blended model of online learning, F2F instruction, intensives and seminars.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

Not wholly work experience: Student is not undertaking work experience in industry or student is undertaking work experience in industry where learning and performance is directed by the provider.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a

task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment.

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	■	■	■	■	✓	■
Intermediate	■	■	■	■	■	■
Advanced	■	■	■	■	■	■

Learning Outcomes:

Knowledge:

- K1.** Explore theories about how other people construe and learn mathematics
- K2.** Examine a broad range of theories and approaches relating to the learning and teaching of mathematics and related issues
- K3.** Compare a range of theories and approaches relating to the learning and teaching of mathematics and related issues
- K4.** Explore the content associated with teaching mathematics to primary students.

Skills:

- S1.** Develop skills relating to the teaching and learning of mathematics
- S2.** Reflect on the processes associated with the teaching and learning of mathematics
- S3.** Develop skills in their own personal mathematical competence.
- S4.** Critically and creatively interpret the content, processes and standards presented in current mathematics curriculum documents
- S5.** Develop assessment strategies as a basis for evaluation and informing future planning
- S6.** Critically examine the role of technology in mathematics education

Application of knowledge and skills:

- A1.** Develop lesson plans that cater for students at specific levels of Primary Mathematics Education
- A2.** Apply research and contemporary practices in mathematics and numeracy education to meet diverse learners' needs
- A3.** Identify and employ a range of ICT tools and strategies to support children's learning in mathematics and numeracy in line with local and Australian curriculum.

Unit Content:

Topics may include:

- Knowledge and understanding of the concepts related to number and numeracy; measurement and estimation, space and location, mathematical modelling, reasoning and strategies, mathematical ways of thinking, the nature of proof, and functions and graphs
- Language of mathematics and mathematical language reading, writing and speaking mathematics
- Know and understand literacy and numeracy teaching strategies and their application to teaching mathematics
- Organise content into effective learning and teaching sequences
- Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans in

mathematics

- Understand how students learn with reference to research and education theory, and the implications to teaching
- Further examination of strategies for teaching mathematics, the methods of planning and evaluation
- Engagement with the profession, identification and development of professional practice
- Learning in an academic community

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	Students at this level will demonstrate an advanced ability in a range of contexts to effectively communicate, interact and work with others both individually and in groups. Students will be required to display high level skills in-person and/or online in: <ul style="list-style-type: none"> • Using and demonstrating a high level of verbal and non-verbal communication • Demonstrating a mastery of listening for meaning and influencing via active listening • Demonstrating and showing empathy for others • High order skills in negotiating and conflict resolution skills • Demonstrating mastery of working respectfully in cross-cultural and diverse teams. 	S4, S5	AT2
FEDTASK 2 Leadership	Students at this level will demonstrate a mastery in professional skills and behaviours in leading others. <ul style="list-style-type: none"> • Creating and sustaining a collegial environment • Demonstrating a high level of self-awareness and the ability to self-reflect and justify decisions • Inspiring and initiating opportunities to lead others • Making informed professional decisions • Demonstrating initiative in new professional situations 	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: <ul style="list-style-type: none"> • Reflecting critically to generate and consider complex ideas and concepts at an abstract level • Analysing complex and abstract ideas, concepts and information • Communicate alternative perspectives to justify complex ideas • Demonstrate a mastery of challenging conventional thinking to clarify complex concepts • Forming creative solutions in problem solving to new situations for further learning 	K1, K2, K3, S2, S4	AT1, AT2

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 4 Digital Literacy	Students at this level will demonstrate the ability to work competently across a wide range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: <ul style="list-style-type: none"> • Mastering, exploring, evaluating, managing, curating, organising and sharing digital information professionally • Collating, managing complex data, accessing and using digital data securely • Receiving and responding professionally to messages in a range of professional digital media • Contributing competently and professionally to digital teams and working groups • Participating at a high level in digital learning opportunities 	S6, A3	AT3
FEDTASK 5 sustainable and Ethical Mindset	Students at this level will demonstrate a mastery of considering and assessing the consequences and impact of ideas and actions in enacting professional ethical and sustainable decisions. Students will be required to display skills in: <ul style="list-style-type: none"> • Demonstrate informed judgment making that considers the impact of devising complex solutions in ambiguous global economic environmental and societal contexts • Professionally committing to the promulgation of social responsibility • Demonstrate the ability to evaluate ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Communicating lifelong, life-wide and life-deep learning to be open to the diverse professional others • Generating, leading and implementing required actions to foster sustainability in their professional and personal life. 	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, S1, S2, S3, S4, S5, A2, A3 APST 1.2, 1.5, 2.5	A series of reflective pieces of academic writing. Critical reflective analysis pieces responding to current issues in mathematics education, relating these back to personal learning, educational policy and research.	Journal	40-60%
K1, K2, K3, S1, S2, S3, S4, A1, A2, A3 APST 1.5, 2.1, 2.2, 2.3	Design a learning sequence and lesson plans for students in line with current mathematics curriculum. Reflect on planned activities and how they link with the learning and teaching theory delivered in the course.	Teaching Activity & Reflection	40-60%
K4 S1, S2, S3, S6, A3. APST 2.1, 2.6, 4.5	Digital technology evaluation task	Hurdle task	S/N

Alignment to the Minimum Co-Operative Standards (MiCS)

The Minimum Co-Operative Standards (MiCS) are an integral part of the Co-Operative University Model. Seven criteria inform the MiCS alignment at a Course level. Although Units must undertake MiCS mapping, there is NO expectation that Units will meet all seven criteria. The criteria are as follows:

1. Co-design with industry and students
2. Co-develop with industry and students
3. Co-deliver with industry
4. FedTASK alignment
5. Workplace learning and career preparation
6. Authentic assessment
7. Industry-link/Industry facing experience

MiCS Course level reporting highlights how each Course embraces the principles and practices associated with the Co-Operative Model. Evidence of Course alignment with the MiCS, can be captured in the Course Modification Form.

MICS Mapping has been undertaken for this Unit No

Date:

Adopted Reference Style:

APA

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)

Professional Standards / Competencies:
Australian Professional Standards for Teachers (AITSL) - Graduate Teacher: Initial

Attribute	Assessed	Level
Professional Knowledge		
1. Know students and how they learn		
1.2 Understand how students learn Demonstrate knowledge and understanding of research into how students learn and the implications for teaching.	Yes	Introductory
1.5 Differentiate teaching to meet the specific learning needs of students across the full range of abilities Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.	Yes	Introductory
2. Know the content and how to teach it		
2.1 Content and teaching strategies of the teaching area Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area.	Yes	Introductory
2.2 Content selection and organisation Organise content into an effective learning and teaching sequence.	Yes	Introductory
2.3 Curriculum, assessment and reporting Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans.	Yes	Introductory
2.5 Literacy and numeracy strategies Know and understand literacy and numeracy teaching strategies and their application in teaching areas.	Yes	Introductory
2.6 Information and Communication Technology (ICT) Implement teaching strategies for using ICT to expand curriculum learning opportunities for students.	Yes	Introductory
Professional Practice		
4. Create and maintain supportive and safe learning environments		
4.5 Use ICT safely, responsibly and ethically Demonstrate an understanding of the relevant issues and the strategies available to support the safe, responsible and ethical use of ICT in learning and teaching.	Yes	Introductory