

Unit Outline (Higher Education)

Institute / School: Institute of Education, Arts & Community

Unit Title: NUMERACY AND DIGITAL TECHNOLOGY

Unit ID: EDECE2017

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): (EDECE2003)

ASCED: 070303

Description of the Unit:

This unit is designed to provide Pre-Service Teachers (PSTs) with a sound understanding of the mathematics in the lives of babies, toddlers, and young children. It will explore theoretical, cultural, historical, and current approaches of teaching play-based mathematics. PSTs will explore the use of digital technology with children and as a tool for pedagogical practice.

This unit aims to build understanding of PSTs own values, beliefs, and preferences toward mathematics and digital technology in their lives, and explore how these can affect their pedagogical practices. PSTs will reflect on children's prior knowledge and interests, and the importance of family preferences and expectations. They will explore how these influence the planning of experiences and include ways to document and share children's mathematical learning with families. Throughout the unit, the PSTs will build a resource of mathematical learning experiences informed by the early childhood learning frameworks. They will explore how learning experiences can be modified to meet the needs of a range of children including different ages, abilities, interests, and backgrounds.

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.** Examine and review historical, cultural, and current teaching approaches for teaching early childhood mathematics.
- K2.** Make connections between teachers' actual and perceived mathematical abilities and confidence levels and their pedagogical practices.
- K3.** Explore how children's positive mathematical experiences can build self-efficacy.
- K4.** Identify ways to explore digital technology with children and as a tool for pedagogical practice.

Skills:

- S1.** Observe and identify the mathematics in children's interactions during individual, small group, and whole group experiences.
- S2.** Identify technologies to facilitate children's mathematical learning.
- S3.** Build personal understanding of mathematical concepts and terminology.
- S4.** Build an understanding of the importance of play-based learning.
- S5.** Share information with families on children's mathematical and technological learning.

Application of knowledge and skills:

- A1.** Build a collection of play-based learning experiences that can be used to teach mathematical and technological content in an ECE setting.
- A2.** Understand how to modify learning experiences to meet the needs and interests of diverse children.
- A3.** Design learning opportunities that incorporate mathematics into other curriculum areas.

Unit Content:

Topic to include

- Historical and current teaching practices in early childhood mathematics and digital technology
- How young children learn mathematics through play and everyday experiences
- Age appropriate mathematical terminology and experiences
- Personal values and biases toward mathematics
- Planning for learning including those with diverse linguistic, religious and socioeconomic backgrounds
- Building children's confidence and wellbeing
- Sourcing and planning with natural and recycled manipulatives
- Linking learning experiences to the VEYLDF
- Use of technology in young children's learning
- Sharing children's learning with families
- Identifying and connecting with the mathematical content in storybooks.

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	<p>Students will demonstrate the ability to effectively communicate, inter-act and work with others both individually and in groups. Students will be required to display skills in-person and/or online in:</p> <ul style="list-style-type: none"> Using effective verbal and non-verbal communication Listening for meaning and influencing via active listening Showing empathy for others Negotiating and demonstrating conflict resolution skills Working respectfully in cross-cultural and diverse teams. 	K4, S1, S5	AT2
FEDTASK 2 Leadership	<p>Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in:</p> <ul style="list-style-type: none"> Creating a collegial environment Showing self-awareness and the ability to self-reflect Inspiring and convincing others Making informed decisions Displaying initiative 	K2, S4, S5, A2, A3	AT1, AT2
FEDTASK 3 Critical Thinking and Creativity	<p>Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in:</p> <ul style="list-style-type: none"> Reflecting critically Evaluating ideas, concepts and information Considering alternative perspectives to refine ideas Challenging conventional thinking to clarify concepts Forming creative solutions in problem solving. 	K1, K2, K3, K4, S3, A1, A2	AT1, AT2

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 4 Digital Literacy	<p>Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in:</p> <ul style="list-style-type: none"> Finding, evaluating, managing, curating, organising and sharing digital information Collating, managing, accessing and using digital data securely Receiving and responding to messages in a range of digital media Contributing actively to digital teams and working groups Participating in and benefiting from digital learning opportunities. 	K4, S2, S5, A1	AT1, AT2
FEDTASK 5 Sustainable and Ethical Mindset	<p>Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in:</p> <ul style="list-style-type: none"> Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts Committing to social responsibility as a professional and a citizen Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses Embracing lifelong, life-wide and life-deep learning to be open to diverse others Implementing required actions to foster sustainability in their professional and personal life. 	n/a	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, K4, K5; APST: 1.2, 1.3, 6.2, 7.3	Explore the role of the educator in teaching early childhood mathematics, drawing connections to their own personal values and biases around mathematical understandings and teaching mathematics in an ECE setting.	Academic Essay	40% - 60%
K2, S1, S2, S3, S4, S5, A1, A2, A3; APST: 1.2, 2.1, 2.5, 2.6, 3.2	Using provided scenarios, report on the range of mathematical and/or technology concepts the children may be exploring and discuss ways teachers are supporting the children's learning in these areas. Identify a range of learning experiences that focus on mathematical and technology development that can follow on from your chosen scenario, including information for parents/caregivers.	Report and Planning	40% - 60%

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	Intermediate
1.3 Students with diverse linguistic, cultural, religious and socioeconomic backgrounds Demonstrate knowledge of teaching strategies that are responsive to the learning strengths and needs of students from diverse linguistic, cultural, religious and socioeconomic backgrounds.	Yes	Intermediate
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	Intermediate
2.2 Content selection and organisation Organise content into an effective learning and teaching sequence.	Yes	Intermediate
2.5 Literacy and numeracy strategies Know and understand literacy and numeracy teaching strategies and their application in teaching areas.	Yes	Intermediate
2.6 Information and Communication Technology (ICT) Implement teaching strategies for using ICT to expand curriculum learning opportunities for students.	Yes	Intermediate
Professional Practice		
3. Plan for and implement effective teaching and learning		
3.2 Plan, structure and sequence learning programs Plan lesson sequences using knowledge of student learning, content and effective teaching strategies.	Yes	Intermediate
3.4 Select and use resources Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning.	Yes	Intermediate
Professional Engagement		
6. Engage in professional learning		

6.2 Engage in professional learning and improve practice Understand the relevant and appropriate sources of professional learning for teachers.	Yes	Intermediate
7. Engage professionally with colleagues, parents/carers and the community		
7.3 Engage with the parents/carers Understand strategies for working effectively, sensitively and confidentially with parents/carers.	Yes	Intermediate