

UNIT OUTLINE FOR EDP252.9 Developing Problem Solving and Mental Computations

Name of Unit 1 (Unit Code 1)

Developing Problem Solving and Mental Computations (EDP252.9)

SECTION 1 – GENERAL INFORMATION

Administrative details

Associated higher education awards	Duration	Level <i>(for example, introductory, intermediate, advanced level, 1st year, 2nd year, 3rd year)</i>	Unit Coordinator <i>(incl. academic title)</i>
Master of Teaching – Primary	One semester	2 nd year	Head of Program

Core or elective unit

Indicate if the unit is a

- core unit
- elective unit
- other (please specify below):

Unit weighting

Using the table below, indicate the credit point weighting of this unit and the credit point total for the course of study (for example, 10 credit points for the unit and 320 credit points for the course of study).

Unit credit points	Total course credit points
6 credit points	96 credit points

Student workload

Using the table below, indicate the expected student workload per week for this unit.

No. timetabled hours per week	No. personal study hours per week	Total workload hours per week
3	6	9

For those students requiring additional English language support, how many additional hours per week is it expected that they will undertake?

Additional English language support: 0 hours per week

Pre-requisites and co-requisites

Are students required have undertaken a prerequisite or co-requisite unit for this unit?

- Yes No

If **YES**, provide details of the prerequisite or co-requisite requirements below.

Pre-requisite: EDP151.9 Primary Mathematics

SECTION 2 – ACADEMIC DETAILS**Brief description of the content of the unit**

Numeracy is an essential skill for all people. The development of both effective and efficient mental computation strategies and flexible problem-solving abilities greatly enhances number sense and, in turn, increases numeracy potential. This unit seeks to provide students with a greater understanding about how teachers can plan and implement problem solving within a mathematical classroom. An in-depth investigation of a strategy approach to mental computation, and the use of models, will be explored.

Learning outcomes for the unit

1. Review and critique current literature / research in relation to the development of children's mental strategies and justify a personal approach to teaching mental computation.
2. Analyse the Proficiency Strand of the Australian Curriculum and identify classroom structures that support the development of each of the proficiencies, in connection to mental computation
3. Use appropriate assessment instruments to identify students who are at academic risk in mathematics and develop tasks that assist students to acquire and generalize explicit mental strategies in the primary years.
4. Diagnose individual learning needs and plan for accelerating the learning of underperforming students in counting, place value, addition, subtraction, multiplication, division and rational number.

Assessment tasks

Type	Learning Outcome/s assessed	When assessed – year, session and week	Weighting
Academic paper Critical analysis of research into Mental Computation (3000 words)	1,2	S1 Week 8	50%
Analysis, plan and justification Diagnostic Analysis and intervention plan with theoretical justification for a child experiencing difficulty in mental computation. This comprises assessment of a child/small group of children in a school setting, development of individualized / small group teaching plan and a discussion on misconceptions and best practice. (3000 words)	1,2,3,4	S1 Week 14	50%

2.1 Prescribed and recommended readings

Provide below, in formal reference format, a list of the prescribed and recommended readings for the unit.

Prescribed reading:

McIntosh, A. (2005). *Developing Mental Computation*. Tasmania: Department of Education.

Recommended reading:

Fosnot, C. (2001) *Young mathematicians at work: constructing number sense, addition, and subtraction*.

Humphreys, C. (2015) *Making number talks matter: developing mathematical practices and deepening understanding, grades 4-10*. USA: Stenhouse.

Jorgensen, R., & Dole, S. (2020). *Teaching mathematics in Primary School*. (3rd ed.). Sydney: Allen & Unwin.

Shumway, J. (2011) *Building Numerical Literacy every day in grades K-3*. USA: Stenhouse.