

NORWOOD PRIMARY SCHOOL -Numeracy Learning



Research shows that consistent practice across the school makes the biggest impact on student learning.

NUMERACY AND MATHEMATICS AT NORWOOD P.S.

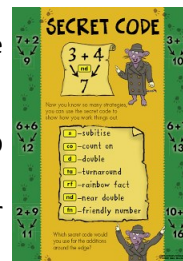
Our shared vision is for all students to receive effective high quality teaching in Mathematics to support the development of rich mathematical knowledge and understanding and for all students to apply mathematical skills with confidence in their daily lives.

The Australian Curriculum: Mathematics, aims to ensure that students:

- Are confident, creative users and communicators of mathematics, able to investigate, represent and interpret situations in their personal work lives and as active citizens
- Develop an increasingly sophisticated understanding of mathematical concepts and fluency with processes, and are able to pose and solve problems and reason in Number and Algebra, Measurement and Geometry, and Statistics and Probability.
- Recognise connections between areas of mathematics and other disciplines and appreciate numbers as an accessible and enjoyable discipline to study.

PEDAGOGY—A CONSISTENT APPROACH

- Teachers are implementing a daily 3 part numeracy block engagement, whole class explicit teaching and reflection.
- A balance of discovery and inquiry, explicit teaching, and problem solving are central to the mathematics teaching.
- The Natural Maths Secret Code Strategies are explicitly taught
- Planning and implementation of the learning program is influenced by DECD TfEL framework
- Teachers share practice and provide feedback through discussions and peer observations
- Students receive targeted feedback aligned to learning goals and curriculum outcomes
- Units of work are problem orientated with a focus on real life and relevant situations
- The STAR model and a range of problems solving strategies are explicitly taught
- Problems allow for differentiation and multiple entry points.
- Students learn to reason mathematically and reflect on their learning
- Collaboration and communication is encouraged and promoted; developing a community of learners
- The community is engaged through parent involvement, information sharing and whole school events.



QUALITY CURRICULUM

EXTERNAL REVIEW FINDINGS—June, 2015

Improve numeracy achievement and retention in upper bands through the consistent implementation of effective pedagogical approaches in numeracy in all classes.

- Our school practices are consistent with the Australian Curriculum outcomes and Achievement Standards, and DECD requirements R-7.
- A minimum of 300 minutes per week of mathematics is taught
- Mathematics proficiencies are integral to planning and teaching
- General capabilities and cross-curriculum priorities are incorporated
- Teachers articulate and share the expected learning with parents and students—term overviews, learning intentions and learning goals.
- Numeracy skills and knowledge are integrated across all subject areas using the mathematical proficiencies of understanding, problem solving, fluency and reasoning.

MENTAL COMPUTATION—'Secret Code'

	R	1	2	3	4
Subitize, Count All, Count On and Doubles					
Turnarounds, Rainbow Facts, Near Doubles & Friendly Numbers					
Bridge Through to 10 & extend number facts; Count on 10, 20, 30, Doubles and Near Doubles, Rainbow Facts to 100 & Friendly No.s					
Landmark Numbers, Tallies, Rainbow Facts linked to Number Splitting					
Rounding and Round & Adjust					

'Secret Code' forms the main mental computation strategies. Students are encouraged to use initials of each strategy which will assist them in reflections and be used by teachers as an assessment tool. These strategies are further developed in years 5-7 along with other strategies. These form a 'tool box of strategies', which the students can use in their daily mathematics tasks and everyday life. Posters are displayed/available in class which remind students of strategies and act as a prompt when reflecting.



IN PRACTICE

The Numeracy Block Structure uses the ‘Wave of Intervention’ model to support all learners to achieve high standards. Student’s data and Learning Plans are used to make informed decisions about the Wave of Intervention the student receives. This cycle allows for immersion and exploration of particular mathematical concepts.

Wave 3: Intensive Support (for a FEW students)

Wave 2: Small group Intervention (for SOME students)

Wave 1: Whole Class Teaching (for ALL students)

Engagement—10 mins

A rigorous tuning in activity focusing on current learning, explicit vocabulary and an aspect of a specific strategy.

Wave 1 - Whole Class Explicit Teaching - 30 mins

Problematised Situation

- Engage students with a problem that has multiple entry points
- Use a process to solve; STAR or See, Plan, Do, Check
- Challenge mathematical thinking
- Keep work samples detailing students mathematical thinking

Strategy Lesson

- Designed to provide students with specific learning opportunities
- Teach explicitly the skills and strategies needed to develop student understanding of the relevant topic
- Correct common error patterns, checking for accuracy
- Monitor and improve student skills

WAVE 2 – Guided Activity.

A small group works with the teacher on a specific skill/modified problem using the whole class activity as a base of their work.

WAVE 3 – Intense Intervention

Individual students who need intensive assistance are given opportunities to work with the teacher on specific skills. This is monitored and reinforced through further activities with an SSO.

Reflection—10 mins

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| Reflect on what has been learnt | Students share and compare strategies |
| Address any misconceptions | Mathematical connections made between ideas |
| Acknowledge progress and success | Working as a community of learners |

BIG IDEAS IN NUMBER

Trusting the Count—developing flexible mental objects for the numbers 0-10

Place Value—the importance of moving beyond counting by ones, the structure of the base 10 numeration system.

Additive and Multiplicative Thinking—develop efficient mental and written computation strategies

Partitioning—building common fraction and decimal knowledge and confidence

Proportional Reasoning—needed to solve problems involving fractions, decimals, percent, ratio, rate and proportion.

Generalisation—fundamental to engage with broader curricula expectations.

	R	1	2	3	4	5	6	7
Trusting the Count	Dark Blue	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
Place Value	Light Blue	Dark Blue	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
Additive and Multiplicative Thinking	Light Blue	Light Blue	Light Blue	Dark Blue	Dark Blue	Light Blue	Light Blue	Light Blue
Partitioning	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Dark Blue	Light Blue
Proportional Reasoning	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Dark Blue
Generalisation	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue

RESOURCES

Australian Curriculum (ACARA)	http://www.australiancurriculum.edu.au
DECD Leaders Resource	http://www.acladersresource.sa.edu.au/
Scootle	http://www.scootle.edu.au
Australian Professional Standards for Teachers	http://www.aitsl.edu.au/australian-professional-standards-for-teachers
Maths300	http://www.maths300.esa.edu.au/
Splash ABC	http://splash.abc.net.au/
STAR poster & Mental Computation Strategy posters	
nrich	http://nrich.maths.org
PAT Teaching Resources	http://oars.acer.edu.au - use individual login details (email address with no capitals; use forgot password/ password reset if needed.
Skoolbo	http://skoolbo.com.au —See Daniela for class access