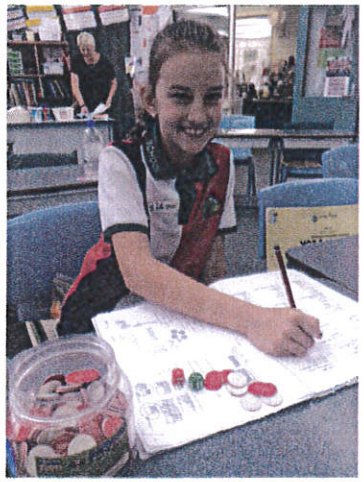
Annandale State School
Independent Public School

Mathematics at Annandale State School

Parent Handbook



QUT

YuMiDeadly
Growing community through education

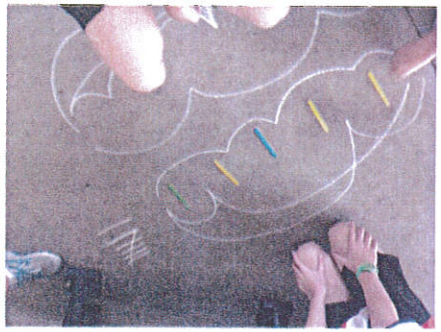
Annandale School, along with all state schools and private schools in Australia, implement the Australian Curriculum.

The Australian Curriculum sets consistent national standards to improve learning outcomes for all young Australians. It sets out, through content descriptions and achievement standards, what students should be taught and achieve, as they progress through school. The content strands of the Australian Curriculum for Mathematics are:

- Number and Algebra
- Measurement and Geometry
- Statistics and Probability

In 2013, Annandale State School began implementation of **YuMi Deadly Maths pedagogy**. Since 2013 teachers from every year level have undergone intensive training and are using the pedagogy successfully in their classrooms to teach the Australian Curriculum. This handbook aims to provide a brief overview of some of the key aspects of YuMi Deadly Maths and offer ways you can support the development of your child's numeracy skills.

The **YuMi Deadly Maths pedagogy** was developed by the YuMi Deadly Centre within the Education Faculty of **QUT** in Brisbane under the leadership of **Prof. Tom Cooper**. It is designed to enhance mathematics learning outcomes, improve participation in higher mathematics subjects, and improve employment and life chances and participation in tertiary courses. The pedagogy is unique in its focus on creativity, structure and culture with regard to mathematics and whole-of-school change with regard to implementation. *



*Acknowledgement for Concepts and Text for pages 2-6 of this document Reference: YuMi Deadly Centre (2012) *YuMi Deadly Maths Program Pre-Prep to Year 9 Overview: philosophy, Pedagogy, Change and Culture.* Brisbane, Qld: QUT

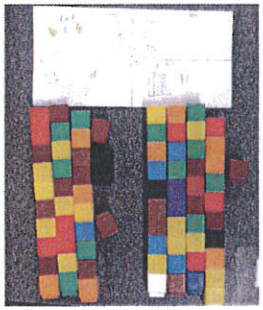
YuMi Deadly Maths is based on the belief that knowledge of the structure of Maths particularly of sequences and connections and big ideas, can assist teachers to be effective and efficient in teaching mathematics. This is because it enables teachers to:

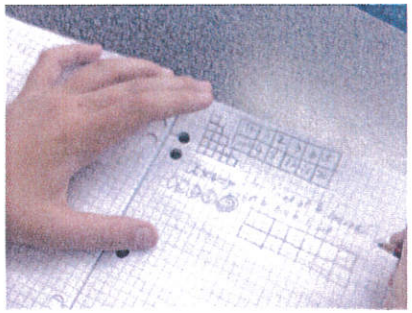
(a) ***determine what mathematics is important to teach*** (mathematics with many connections or based on big ideas is more important than mathematics with few connections or little use beyond the present);

(b) ***link new mathematics ideas to existing known mathematics*** (mathematics that is connected to other mathematics or based on the one big idea is easier to recall and provides options in problem solving);

(c) ***choose effective instructional materials, models and strategies*** (mathematics that is connected to other mathematics or based around a big idea commonly can be taught with similar materials, models and strategies); and

(d) ***teach mathematics in a manner that makes it easier for later teachers to teach more advanced mathematics*** (by preparing the linkages to other ideas and the foundations for the big ideas the later teacher will use).





Big ideas are mathematical ideas that apply across many levels of mathematics (i.e., across many years of school mathematic) and many topics of mathematics. For example, knowing that 2+3 =3+2 is an idea that just grows with the mathematics, showing how the big idea called the commutative principle recurs across many levels and types of mathematics:

$2 + 3 = 3 + 2$

$367 + 2012 = 2012 + 367$

$4.65 + 23.8 = 23.8 + 4.65$

$34.2m + 27.9m = 27.9m + 34.2m$

$2\frac{3}{7} + 4\frac{1}{6} = 4\frac{1}{6} + 2\frac{3}{7}$

$5h\ 34m + 4h\ 56m = 4h\ 56m + 5h\ 34m$

$2a + b = b + 2a$

$f(x) + g(x) = g(x) + f(x)$

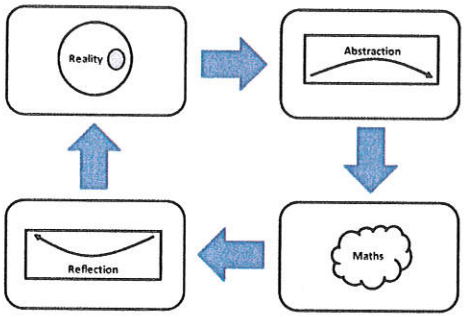
Beginning in the *reality* stage of learning, students:

- Access knowledge of their environment and culture.
- Utilize existing mathematical knowledge
- Experience real-world activities that act out the idea.

The focus of this component is to connect the new ideas to existing ideas and everyday experiences. Students are provided with opportunities to generate their own experiences and verbalise their own actions.

In the *abstraction* stage, students

- Experience a sequence of representational activities (physical-virtual-pictorial-language-symbols) that develop meaning for the mathematical ideas
- Develop connections between reality and representational activities and mental models through body →hand →mind activities
- Create own representations including language and symbols

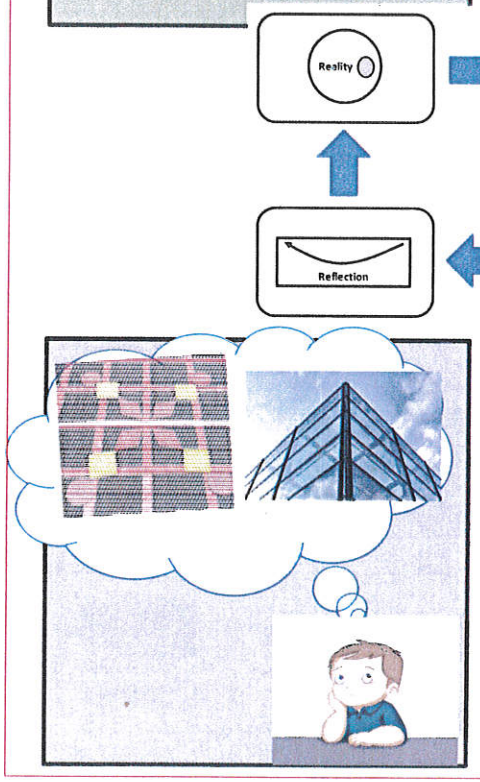


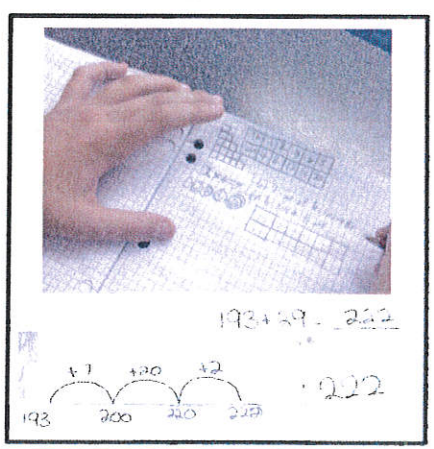
In the *reflection* stage, students

- Solve problems that apply the idea back to reality.
- Extend the idea (use reflective strategies- being flexible, generalising, reversing and changing parameters)

In the *mathematics* stage, students

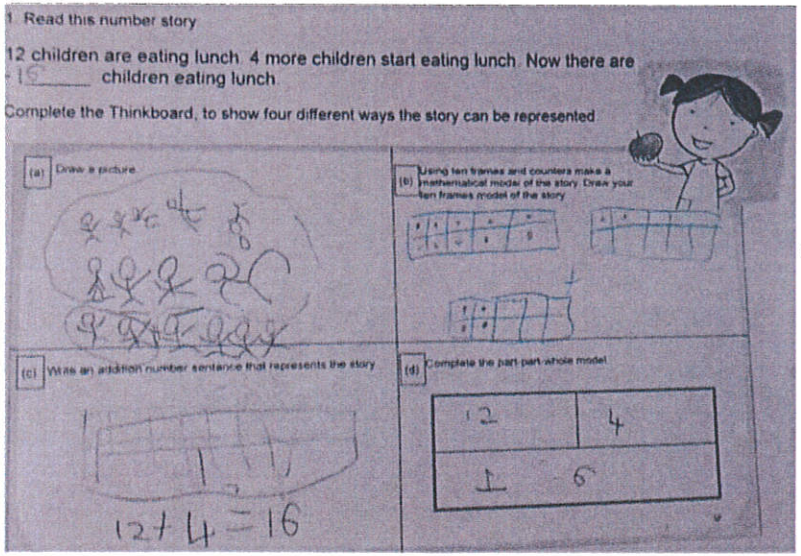
- Appropriate and understand the formal language and symbols for the mathematical idea.
- Practice to become familiar with all aspects of the idea.
- Construct activities to connect the idea to other mathematical ideas





YuMi Deadly Maths uses an approach that provides students with multi-representations of mathematical ideas that include language, symbols, graphs, virtual materials, physical materials and acting out the idea in the real world.

For example, children can count verbally, "twenty-two, twenty-three,..." and so on while, at the same time, adding bundling sticks into a Ten/Ones chart, recording the number on paper, and adding one on a calculator. Research has shown that learning is deepest when children work with multiple representations. In YDM, students often use a thinkboard which is divided into 5 regions -one for symbols, one for language, one for drawings or diagrams and one for a real world story (problem).



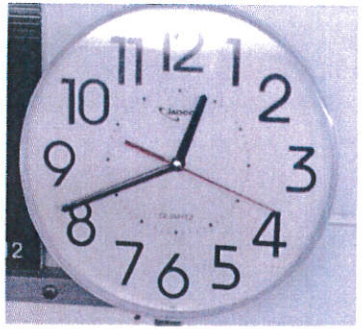
Physical materials are commonly used to support students learning mathematics. As students develop their mathematical understanding the materials used to represent real world contexts need to gradually decrease in the amount of contextual information they provide for students.

How can I help my child develop mathematically?

1. Point out when you are doing maths in everyday life and encourage your child to help when appropriate e.g. measuring a shelf, cooking, cutting sandwiches in half, sorting socks, shopping and fishing.

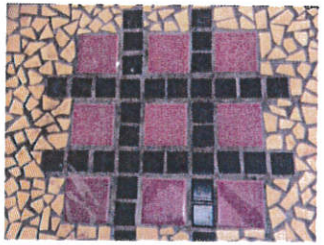
2. Never tell your child maths is too difficult or not enjoyable (Even if that's what you think).

3. Talk out loud about the maths you are doing e.g. "It's 7.45am. We have to leave at 8.00. So be ready in 15 minutes."
   "There are 5 people in our family and John and Margaret are two more. That means there are 7 people here for dinner."



4. Listen when your child shows you a new way to solve a maths problem. A good mathematician is flexible in their thinking and knows more than one way to solve a problem.

5. Look for and point out patterns in real life e.g. visual patterns, number patterns, musical patterns and structural patterns. Patterns is a big idea in Maths.



6. Find and read storybooks containing mathematical concepts e.g. *The Doorbell Rang* by Pat Hutchins.

How can I help my child develop mathematically?

(Continued from previous page)

7. Encourage your child to use construction materials such as Lego and join them in the fun, talking about what you're doing.

8. Encourage them to do craft activities, especially those which involve counting, measuring, folding, and patterning.

9. Use sport to discuss scoring, player statistics, distances, and time.
10. In the car, point out the Maths involved in driving (distances, speed, odometers, RPM, direction).

11. When travelling, play games involving Maths. Find numbers on road signs and number plates. Add or multiply numbers on number plates.

12. Use computer programs, aps and websites to practice mathematical concepts but not exclusively. Find a balance.

13. Play board games or card games with your child.

Printed December 2015

Annandale State School

Independent Public School

Cnr Oleander and Yolanda Drive Annandale Queensland 4814

E: the.principal@annandaless.eq.edu.au

W: annandaless.eq.edu.au

P: (07) 47295111

Printed December 2015