Friday, 3 March 2017

Module 1 - Week 1

STEM context, AC & NAPLAN

- ACARA : Australian Curriculum and Reporting Authority
- AITSL : Australian Insitute for Teaching and School Leadership
- SCSA : Schools Cirriculum and Standards Authority (WA)
- STEM : Science, Technology, Engineering and Mathematics
- PISA : Programme for International Students. Conducted by the OECD every three years to collect data on reading literacy and mathematical literacy of 15 year old students. 65 countries.
- TIMSS : Trends in International Mathematics and Science Study. Conducted every four years to collect data on Year 4 and Year 8 students. 57 countries.
- NAPLAN : National Assessment Program - Literacy and Numeracy. Every year for students in years 3,5,7, and 9. Tests Reading, Writing, Numeracy, and Language Conventions (spelling, grammar, and punctuations)

- What is Mathematics? The study of numbers, patterns and relationships. A tool for solving problems and thinking.
- Why teach Mathematics? Many disciplines in science, engineering, medicine, computing, accounting, economics etc. are applied mathematics. The content of contemporary education programs (i.e., curriculum) should reflect the needs of the society that they serve. Should prepare students for careers in the 21st century.
- Australian Curriculum Key Proficiency Strands: Understanding, Fluency, Problem solving, and Reasoning.
- Three Content Strands of the Australian Curriculum: Number and Algebra, Measurement and Geometry, and Statistics and Probability (see chart)
- Behaviourism: Edward L. Thorndike, B.F. Skinner and Robert Gagne. Learning means producing a particular response to a particular stimulus. Behaviour can be shaped by reinforcement of drill and practice. Clear objectives can help both teachers and students.
- Constructivism: Willian Brownell, Jean Piaget, Jerome Bruner and Lev Vygotsky. Learning is a social process in which children engage in discussion with themselves and others as they develop intellectually. Learners actively create (construct) their own

knowledge. Students create (construct) new mathematical knowledge by reflecting on their thoughts and actions.

Module 1 - Week 2

Numbers Through the Ages:

- Prehistoric, Early Civilisation, The Ancient Greeks, The Romans, Eastern Mathematics, The Middle Ages, The Renaissance, The Digital Age.
- Many mathematical words are derived from Latin or Greek.
- Roman numerals are still used commonly for; Clock faces, Dates, Lists, and Music.
- The number of degrees in a circle, seconds in a minute, and minutes in an hour is a legacy of the Babylonians (c. 500 BC) whose number system was based on 60.
- Fibonacci: Discovered that any number could be written using a combination of just 10 numerals 0-9. Dependent on place value(a digit is ten times larger that the digit to its right), the place of the numeral in the sequence.
- Billions, millions, thousands, hundreds, tens, ones. start from the top read the numbers, say the group name, continue.
- Always work from left to right when reading numbers.

Proportional vs Non-Proportional:

- Proportional: size increases with value eg. Beans.
- Non- Proportional: size does not change with value eg. Money

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What is number sense?

- Number Sense: means having flexible ways of thinking and calculating.
- Number sense refers to an intuitive feel for numbers and their various uses and interpretations. Number sense also includes the ability to compute accurately and efficiently, to detect errors, and to recognize results as reasonable. People with number sense are able to understand numbers and use them effectively in everyday living.
- Cardial: number refers to a quantity e.g. how many are there?