

EDF5017: Numeracy for learners and teachers

Topic Notes

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Topic 1: What is numeracy?

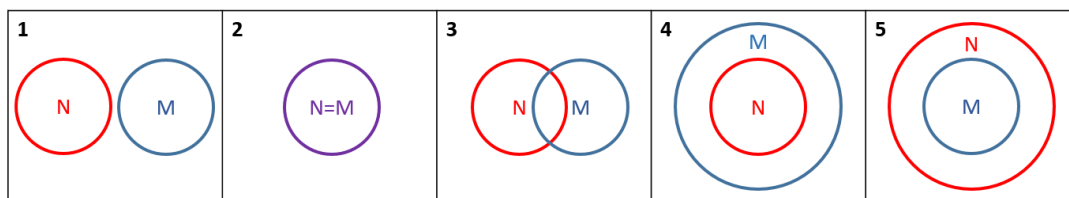
- Numeracy = mathematical literacy
- OECD - Goos, Geiger & Dole (2012) & Australian Association of Mathematics Teacher (AAMT): to be numerate is to use mathematics effectively to meet the general demands of life at home, in paid work, and for participation in community and civic life
- Numeracy involves recognising and understanding the role of mathematics in the world and having the dispositions and capacities to use mathematical knowledge and skills purposefully
- Being numerate extends beyond the mastery of basic arithmetic skills.
- Being numerate involves the capacity to make sense of non-mathematical contexts through a mathematical lens and solve real-world problems (Geiger et al., 2015)
- Teachers of all school subjects have an important role to play in developing the numeracy capabilities of students (Bennison, 2014). The development of numeracy requires experience in the use of mathematics beyond the mathematics classroom (Goos et al., 2019)
- Numeracy is the application of mathematics to a contextual problem or challenge

Connecting numeracy and mathematics

- The term numeracy has been useful in highlighting the importance of developing students' abilities to use school mathematics outside of educational settings
- Students are helped to become numerate (able to use their mathematics) in different contexts through a range of experiences outside of their learning of mathematics

Numeracy and Mathematics

Which of the following diagrams best depicts your understanding of the relationship between numeracy (N) and mathematics (M)?



Source: unknown

- A numerate person, therefore, has the ability to use and apply mathematics in a range of contexts outside the mathematics classroom
- https://www.youtube.com/watch?v=qj5j_yfe8Vc
 - Numeracy
 - Numeracy is applied
 - Uses and applies mathematical ideas to solve problems in everyday or applied contexts
 - Is flexible and relates to the context in which it is being applied
 - Is connected to other areas of mathematical concepts and to everyday concepts
 - Mathematics
 - Is abstract (e.g. 5D shapes can't be drawn but can be represented mathematically)
 - Ideas that are used for their own pursuit (e.g. calculus, quadratic equations)
 - About overarching principles and concepts

- Provides the foundations for being numerate
 - Often people can't apply the mathematical skills that they have learnt in the classroom (e.g. percentages) to real-world problems (e.g. if you buy 3 buckets, you'll get a 10% discount), so schools are focusing more on numeracy
 - BUT to be numerate, you have to know the mathematics
 - E.g. $5.00 - 1.35 \rightarrow$ often people panic and struggle to complete this equation – mathematics
 - VS. “here's \$5, mars bars are on special for \$1.35, how much change should you get?” – numeracy
- Source: <https://numeracyguidedet.global2.vic.edu.au/evidence-base/>

21st century numeracy model (Goos, Geiger, & Dole, 2014)

- The development of numeracy requires students to experience using mathematics in a range of real-world contexts and in all school subjects
- Quantitative literacy or *numeracy* is the capacity to deal with quantitative aspects of life. It's elements include confidence in mathematics, appreciation of the nature and history of mathematics and its significance for under-standing issues to the public realm, logical thinking and decision making, use of mathematics to solve practical everyday problems in different contexts, number sense and symbol sense, reasoning with data, and the ability to draw on a range of pre-requisite mathematical knowledge and tools (Steen, 2001)
- “While mathematics can be taught in the context of mathematics lessons, the development of numeracy requires experience in the use of mathematics beyond the mathematics classroom, and hence requires an across the curriculum commitment” (p.7, Human Capital Working Group, Council of Australian Governments, 2008)
- The model represents the multifaceted nature of numeracy in the 21st century

21st Century Numeracy

