

Mathematical Modelling in Singapore Schools: from Research to Practice

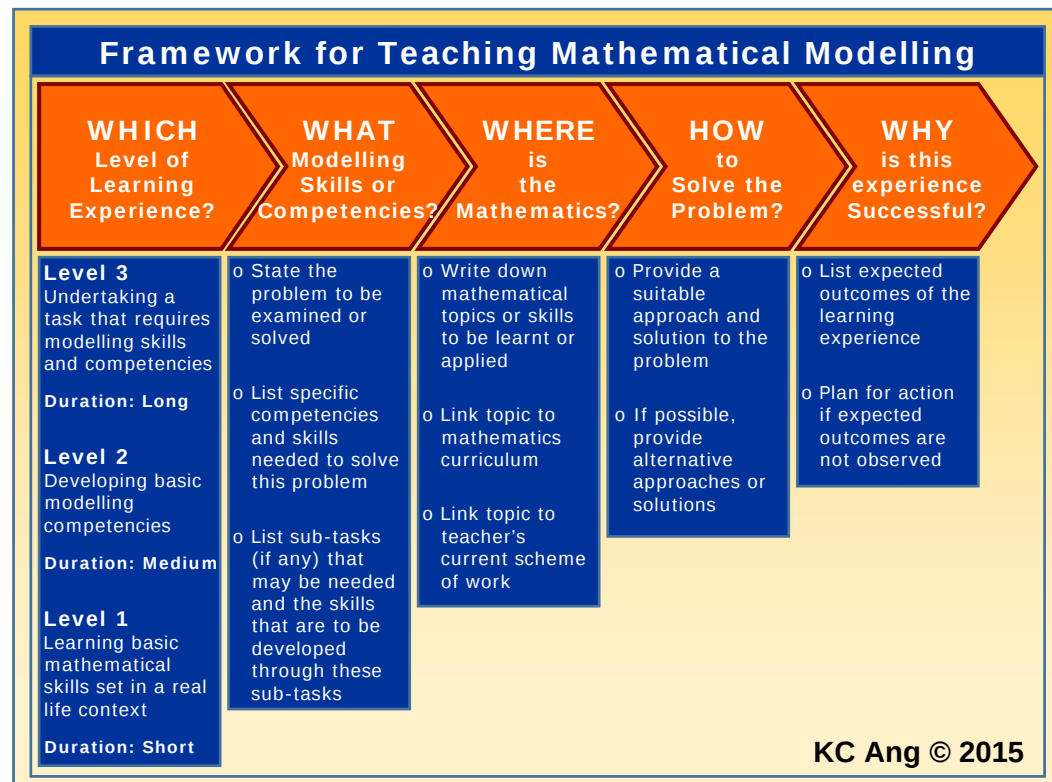
(A project supported by NIE Research Grant, RS 1/16 AKC)

Ang Keng Cheng

Project objectives

- To test material, resources and ideas and develop into lessons based on the *Framework for Teaching Mathematical Modelling* (Ang, 2015); these will be organized and refined, and made available to teachers.
- To set up a learning community, the *Resource Centre for Teachers*, which also serve as an online repository for teachers to learn more about mathematical modelling, and the teaching of mathematical modelling.

Deliverables and Dissemination



www.mathmodelling.sg

Learn - Practise - Share - Events

A Resource Centre For Teachers

At a crime scene ...

Footprints and Police Work

Analysis of footprints (or shoeprints) found at crime scenes can help in forensic investigations. How is this done with mathematics?

The Biggest Box Problem

The Monty Hall Problem

Which is the Best Correction Tape?

Modelling the Growth of Bread Mould

Given a cardboard of a certain fixed size, how do we make the biggest box?

The Monty Hall problem is roughly based on an American TV game show.

Correction tapes are often used by students to wipe out incorrectly typed.

Mould is a type of fungi that can grow on bread in a humid environment.

B12

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EDUCATION

Solving real-life problems with maths

Building maths models from data is helping students think outside the box

Amelia Teng
Education Correspondent

Last month, Raffles Girls' School (RGS) student Marsha Shahrin and some friends played around with dishwashing liquid and water to create bubbles. "Our aim was to create the most number of bubbles with the least number of tries," said the 16-year-old.

The activity was part of a series of year-end modules that the school introduced to Secondary 4 students four years ago. Students learn how to collect empirical data for analysis using data loggers - devices that record data - and use software to create virtual models, for instance. Some schools are adopting such methods - known as mathematical modelling - in efforts to help students see the power of maths in their surroundings.

This includes deciding how to maximise one's wealth with a \$300,000 prize or coming up with the best location on an island for a ferry terminal for tourists.

A new online resource - www.mathmodelling.sg - launched in September by a National Institute of Education (NIE) professor will give teachers greater support in teaching and learning resources.

Associate Professor Ang Keng Cheng, from NIE's mathematics and mathematics education academic group, who along with two other researchers came up with the

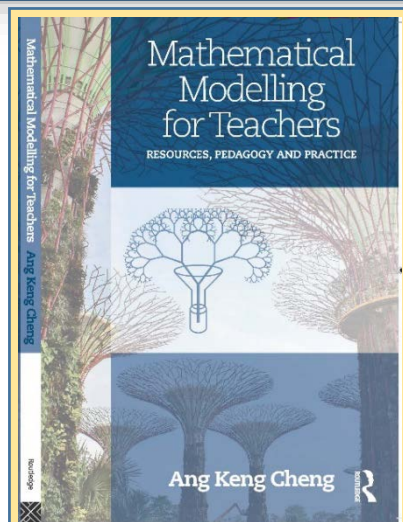
Students from Raffles Girls' School used various techniques to create bubbles. The Tng, assistant head of the school's maths department, pointed out the other skills.

Students from Tng, assistant

More on resources, pedagogy and practice

Or, visit:

www.mathmodelling.sg



References

- Ang, K.C. (2015). Mathematical modelling in Singapore schools: A framework for Instruction. In Lee, N.H. & Ng, K.E.D. (Eds.), *Mathematical modelling - from theory to practice*, World Scientific: Singapore, pp. 53-61.
- Tan, L. S. and Ang, K. C. (2016). A School-Based Professional Development Programme for Teachers of Mathematical Modelling in Singapore, *Journal of Mathematics Teacher Education*, Vol. 19, pp. 399-432



A Professional Sharing on Mathematical Modelling seminar was held on 4 September 2017, during which the online centre was launched.