



## Sharing of Best Practices by EMTA Awardees

### **Talk 1: Developing Mathematical Mindsets through Rich Mathematical Tasks**

**Date:** Wednesday 11 Jan 2023

**Time:** 3 pm to 4 pm

**Presenter:** Tan Ting Ting Karine

**School:** Woodlands Ring Primary School

**Level:** Primary

**Register here for Talk 1:**

<https://ntu-sg.zoom.us/meeting/register/tZMkdeGqpj4qE9e8QykqLvbPFaYer17OIh-G>

**Abstract:**

The revised framework for Singapore Mathematics curriculum places much emphasis on reasoning, communication and connections in addition to thinking skills and heuristics. This sharing explores the use of rich mathematical tasks to improve students' mathematical conceptual understanding and develop mathematical mindsets. In addition, the sharing focuses on how to design tasks to facilitate reasoning and communication in the mathematics classrooms. The tasks assigned to the students allows for multiple approaches and representations and requires the students to reason and communicate their mathematical understanding. In addition to making thinking visible and helping students link mathematical concepts, rich mathematical tasks also surface understandings and misconceptions and help to develop students' metacognition.

### **Talk 2: Making Maths Real (for Primary Maths Learners)**

**Date:** Thursday 12 Jan 2023

**Time:** 3 pm to 4 pm

**Presenter:** Tan Chuyan

**School:** Holy Innocents Primary School

**Level:** Primary

**Register here for Talk 2:**

<https://ntu-sg.zoom.us/meeting/register/tZ0rf-yorzwrHNWbTxI8wH7v0BC4Tuwr4Rtn>

**Abstract:**

How can we develop students to be confident problem solvers? Do our students use mathematics effectively to make sense of information around them or to make informed decisions as they go about their daily lives?

This sharing session focuses on how teachers can develop students' motivation and confidence to use mathematics in real life by giving students the experience of competence through thoughtfully scaffolded challenges and timely feedback, and the experience of autonomy through exploring their own solutions for authentic problems. Sample lessons and hands-on activities designed based on primary level mathematics topics will be shared with participants during the session.

### **Talk 3: Teaching for Deeper Learning – Leveraging on “Compare & Contrast”**

**Date:** Friday 13 Jan 2023

**Time:** 3 pm to 4 pm

**Presenter:** Lam Zhan Hui Pearl

**School:** River Valley High School

**Level:** JC/CI

**Register here for Talk 3:**

<https://ntu-sg.zoom.us/meeting/register/tZUrdeutqD4vE9cFZdcYvDfXlyPTRPTZ1Pil>

**Abstract:**

The A-level Mathematics curriculum places a premium on Problem Solving and Critical & Inventive Thinking skills. To develop these, teachers must guide students beyond facts to abstract concepts which promote transference to unfamiliar contexts. This presentation aims to focus on a particular inquiry-based instructional strategy – “Compare & Contrast”, demonstrated across suitable mathematics topics, in shaping conceptual understandings to bring about concept acquisition and transfer. When learners can take ideas and compare and contrast them, they can better comprehend the complexity of the ideas, which then leads to the abilities to generalize, categorize, sort, evaluate, and understand new information.

### **Talk 4: Metacognition in Mathematics**

**Date:** Wednesday 1 Feb 2023

**Time:** 3 pm to 4 pm

**Presenter:** Renuka Ramakrishnan

**School:** MOE HQ (formerly from Nan Chiau High School)

**Level:** Secondary

**Register here for Talk 4:**

<https://ntu-sg.zoom.us/meeting/register/tZAsceqrrj4vEtXPi6slJoCkAn5y9a1thGGU>

**Abstract:**

Metacognitive processes allow students to monitor their thinking and self-regulate their learning. It is key to Mathematical Problem Solving. This workshop explores ways in which metacognitive processes can be infused into the teaching and learning of Mathematics in our everyday classrooms.

### **Talk 5: Shall we stand together? Engaging learners in a Mathematics Thinking Classroom**

**Date:** Thursday 2 Feb 2023

**Time:** 3 pm to 4 pm

**Presenters:** Chan Puay San, Low Rui Hao Kai, Tan Kit Loong Christopher, Jaymond Tan Jia Wen

**School:** Innova JC

**Level:** JC/CI

**Register here for Talk 5:**

<https://ntu-sg.zoom.us/meeting/register/tZcucOCvqDsiHNNyjDpJai8W8fcRIHO5wqoO>

#### **Abstract:**

Much has been said about the need for educators to develop students' 21st century competencies in preparing them for the future. What about decentralizing mathematics classrooms to better engage students as active learners while developing their communication and collaborative skills? In this session, the team would like to share how a low-barrier change of learning environment through the use of vertical non-permanent writing surfaces (P. Liljedahl, 2021) could transform a quiet physical classroom into a bustling "market place". The team would also share their experience and observations in heterogeneous fixed grouping and visibly random grouping methods.

### **Talk 6: Use of Differentiated Instruction in Lesson Design**

**Date:** Friday 3 Feb 2023

**Time:** 3 pm to 4 pm

**Presenters:** Mandy Chia Puay Neo, Alisa Chua Nyap Lih

**School:** Kheng Cheng School

**Level:** Primary

**Register here for Talk 6:**

[https://ntu-sg.zoom.us/meeting/register/tZ0sduGtrzlrH92UTG\\_YuJsJx\\_mxZlvsqMuN](https://ntu-sg.zoom.us/meeting/register/tZ0sduGtrzlrH92UTG_YuJsJx_mxZlvsqMuN)

#### **Abstract:**

Research has shown that individual learners do not learn in the same way (Fischer and Rose, 2001; Green, 1999; Guild, 2001; Mulroy and Eddinger, 2003). While educators understand that learners have diverse learning needs, few respond to such needs and accommodate these differences in their classrooms (Gable, Hendrickson, Tonelson, and Van Acker, 2000; Guild, 2001).

Vygotsky's (1934) theory states that scaffolding, providing hints or tips to the learner, will help learners achieve conceptual understanding. Opportunities were created for students to foster group learning, providing them with the options to use manipulatives, resources and differentiated hints to scaffold learning at the help corners. This allows the teacher to provide direct intervention to students individually or in small groups using differentiated instruction. This sharing will showcase how differentiated instructional strategies are applied in a Primary 6 lesson. Instead of providing direct instructions to solve a problem involving volume, students are encouraged to explore and investigate to find solutions themselves by connecting new ideas with what they already know to develop their capacity for inquiry.