

## **Mathematical Problem Solving on Numbers and Arithmetic in Upper Primary Mathematics Classroom**

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### **ABSTRACT**

**Purpose** - This paper aimed to present the design of a teaching module on mathematical problem solving for the upper primary mathematics.

**Method** - The module used Pólya's and Schoenfeld's problem solving models as the theoretical framework. The researchers introduced problem-solving processes through specialized mathematics "practical" lessons together with carefully selected problems from the Arithmetic strand of the Singapore primary school mathematics curriculum. In the selection of appropriate mathematical problems, the following criteria were used: the selected problem (1) could potentially capture students' interest and curiosity; (2) is accessible to students in terms of cognitive resources at the upper primary level (students aged 10 to 12) (3) can be approached in multiple ways; and (4) could potentially promote higher-order thinking and conceptual understanding. The problem-solving lessons comprised four key features, namely teacher modelling, teacher scaffolding, small-group work and independent work. The scaffolding from Toh, Quek, Leong, Dindyal and Tay (2011) was used to guide students through the entire process of problem solving.

**Findings** – The module provided teachers a unique glimpse into students' mathematical understanding. The writing activities helped students them to think about and articulate what they know on the content topic at hand.

**Significance** - The teaching module will provide ample support and useful guidance for primary school mathematics teachers who wish to introduce students to the problem solving as a creative process and enhance their problem solving skills.

**Keywords:** Problem solving, Mathematics teaching, Arithmetic, Teaching module