



High-Stakes Examination Tasks as Impetus for Primary Mathematics Teachers' Reform in their Instructional Practice

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A study involving the professional development (PD) of primary school mathematics teachers in Singapore shows that high-stakes examination tasks did kick-start awareness and thinking about teaching for big ideas. Teachers from two primary schools participated in the PD for two years. The data presented in this paper is from the focus group discussions with the year 5 and year 6 levels teachers at the end of the second year of the PD. The following prompt steered the discussion.

During the first two PD workshops last year and again this year, all of you worked on high stakes examination tasks (mainly taken from the PSLE (Primary School Leaving Examination) mathematics past papers). Please share with us your thoughts about any benefits that have arisen related to knowledge of big ideas and changes in your classroom instruction. You may also share with us any challenges that you encountered.

Content analysis of the focus group discussions illuminated the following findings.

- Teachers found that big ideas pervade the curriculum from primary 1 to primary 6 and so all teachers had a part to play in preparing students for the end of year 6 national examination.
- The high-stakes examination tasks that teachers worked on during their hands-on sessions were challenging. They worked actively and collaboratively to resolve them. This experience helped them appreciate the struggle their students go through when confronted with such tasks.
- Engaging in active and collaborative learning when doing the tasks, discussing the different approaches taken and reflecting on the mathematical ideas inherent in the tasks led the teachers to overcome their personal apprehensions. This experience provided them with ideas of how to support their students when they are doing such tasks in class.
- Teachers attempted to make some changes to their pedagogy by placing greater emphasis on 'understanding the task' and examining possible relationships before 'carrying out' any calculations. They were also mindful of their talk and deliberate about what they would like their students to focus on.
- Teachers confessed that time was a concern when planning to teach for big ideas.

The research team were deliberate in using past PSLE Mathematics tasks to kick start teachers work in the PD focussed on teaching for big ideas. Instead of providing teachers with lesson plans that are "offline" forms of knowledge transmission to teach for big ideas, the research team attempted to engage teachers with "online" in-situ forms of knowledge creation through high-stakes examination tasks, that were non-routine and challenging mathematical problems, to teach for big ideas.

For more information, please refer to the following paper presented at the 45th Annual Conference of MERGA in July 2023.

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