

## **Pedagogical Practices of Secondary School Mathematics Teachers**

Berinderjeet Kaur, Toh Tin Lam, Lee Ngan Hoe, Leong Yew Hoong, Cheng Lu Pien, Ng Kit Ee Dawn, Yeo Kai Kow Joseph, Yeo Boon Wooi Joseph and Wong Lai Fong

### **KEY IMPLICATIONS**

On the surface, pedagogical practices of secondary school mathematics teachers fit the caricatures of “examination-driven” and “skill-oriented” teaching. The analytical lens the project adopted allowed us to go beneath the surface to uncover the deliberateness in which the teachers engaged in, down to fine-grained modes of planning, to achieve ambitious goals of teaching.

The implication for researchers and policy makers is that an accurate assessment of quality of mathematics instruction in Singapore classrooms should go beyond simplistic stereotypes; there is a need to attend carefully to the intentional meticulous work that teachers do for the success in our students’ stellar performances in international mathematics tests.

### **BACKGROUND**

Purpose of the study was to unpack the “performative orientation” of mathematics teaching in Singapore secondary schools previously reported by a CORE 2 study at NIE (Hogan, Towndrow, Chan, Kwek, & Rahim, 2013).

### **FOCUS OF STUDY**

Focus of the study was to investigate pedagogies adopted and instructional materials used by experienced and competent mathematics teachers when enacting the curriculum. It also examined the extent in which these pedagogies and characteristics of instructional materials were practised in the broad spectrum of secondary mathematics classrooms in Singapore.

### **KEY FINDINGS**

- Classroom practice of mathematics teachers in Singapore secondary schools goes beyond the “performative orientation” that is often reported. It has a distinctive focus on developing conceptual understanding in tandem with procedural fluency.
- While teachers rely heavily on textbooks as reference materials, they are intentional about how these materials are transformed into actual instructional materials which they bring into classroom teaching in a way that fulfils their ambitious instructional goals.

- While there is evidence to indicate that teachers attend to all the components of the school mathematics curriculum framework, there is room for more specific language and skill development in the area of metacognition.

## SIGNIFICANCE OF FINDINGS

To include any of the below that might be applicable to the project.

### Implications for practice

We have consolidated from the in-depth study of the 30 experienced and competent teachers' classroom practice a knowledge base. This is documented in a book that arose from this project titled "Twelve questions on mathematics teaching" (Kaur et al., 2019) which is freely available at [www.tinyurl.com/enact-12q](http://www.tinyurl.com/enact-12q). This is a valuable resource for school-based professional development for teachers.

## PARTICIPANTS

Classroom practice of 30 experienced mathematics teachers in secondary schools from across the four courses of study was examined. Almost half of their students were also interviewed. Another 691 secondary school mathematics teachers completed an online survey.

## RESEARCH DESIGN

Videography was adopted to document the classroom practice of the 30 teachers. Sequences of their lessons (for a complete topic) were recorded. Post-lesson video-stimulated interviews were held for the teachers and their students. All the written work done by a sample of students during and after the lesson and instructional materials used by the teachers were also documented. An online survey, comprising items derived from the findings of the classroom practices of the 30 experienced and competent teachers, was constructed.

## REFERENCES

- Hogan, D., Towndrow, P., Chan, M., Kwek, D., & Rahim, R. A. (2013). *CRPP Core 2 research program: Core 2 interim final report*. Singapore: National Institute of Education.
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## About the authors

Berinderjeet KAUR, TOH Tin Lam, LEE Ngan Hoe, LEONG Yew Hoong, CHENG Lu Pien, NG Kit Ee Dawn, YEO Kai Kow Joseph, YEO Boon Wooi Joseph and WONG Lai Fong are from the National Institute of Education, Singapore.

Contact Berinderjeet Kaur at [berinderjeet.kaur@nie.edu.sg](mailto:berinderjeet.kaur@nie.edu.sg) for more information about the project.

This brief was based on the project OER 31/15 BK: A Study of the Enacted School Mathematics Curriculum.

## How to cite this publication

Kaur, B., Toh, T. L., Lee, N. H., Leong, Y. H., Cheng, L. P., Ng, K. E. D., Yeo, K. K. J., Yeo, B. W. J., & Wong, L. F. (2020). *Pedagogical Practices of Secondary School Mathematics Teachers* (NIE Research Brief Series No. 20-021). Singapore: National Institute of Education.

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