
Title	Mathematical Progress and Value for Everyone (MProVE)
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Source	<i>Symposium on "Mathematical Development, Learning and Intervention from Preschool to Secondary School", Singapore, 13 March 2014</i>
Organised by	Centre for Research in Pedagogy and Practice (CRPP), National Institute of Education (Singapore)

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Mathematical Progress and Value for Everyone (MProVE)

Tay Eng Guan, Quek Khiok Seng,
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Our starting points

- Our background as mathematicians, mathematics teachers, mathematics teacher educators, ...
- Should trial (and refine) our joint experiences and theoretical ideas in the testbed of actual mathematics classrooms
- View task of changing classroom practice as a complex process – teacher change, curriculum redesign, school structures ...

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[In short: “Hard and unglamorous”
(Schoenfeld, 2007) research]

- Design “Replacement Units” (RU) for Normal (Academic) Lower Secondary mathematics in one school
- Work closely with teachers in the design process
- Trial the theory-design in the classroom
- Learn from the results of implementation and make changes for subsequent trials

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[In short: Design Research]

What we intend to achieve

- Improvements in the quality of mathematics instruction in the secondary NA classrooms
- Growth in teachers' SCK and PCK
- Take the RUs to a 'stable' state – for subsequent diffusion to other schools
- Authentic experiences incorporated into pre-/in-service courses in NIE

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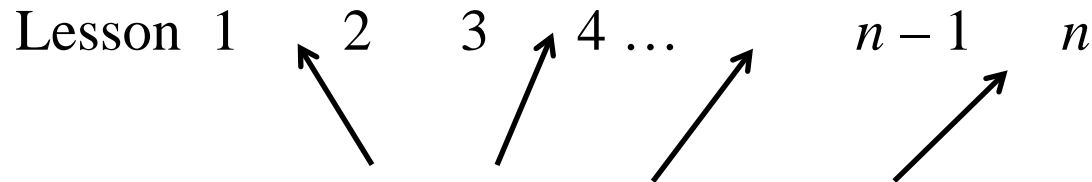
[In short: direct impact on students and teachers]

What we attend to in the design of RUs

- Curriculum planning: (1) Disciplinarity; (2) Procedural fluency; (2) Problem solving disposition; (3) Study habits; (4) Motivation
- Teacher development: (1) Support from KPs and opinion-shapers; (2) Teachers' involvement in every phase of the design – including observation of lessons; (3) Gradual broadening to more teachers implementing the RUs

Model for overall design of RUs

Overall development guided by “Disciplinarity” and
“PSD” or “SH”



Insert at various points “Motivation” and
“Procedural fluency”

PD process for each RU

Teachers' participation	Idea contribution and crafting materials	Active Classroom Observations		Review the whole design and implementation of the RU	Teachers' sharing during PLC
	Discussion on Replacement Unit (RU)	Implementation of RU	Production of video-based summary	Watch video-based summary of RU	Video-based observations
Estimated duration	1 month	2 – 3 weeks	2 – 3 weeks	1 week	2 – 3 PLC meetings

- 1NA: Addition/subtraction involving negative numbers
- 1NA: Number patterns
- 2NA: Expansion and factorisation of quadratic expressions
- 2NA: solving simultaneous linear equations in two variables
- 3NA: Indices