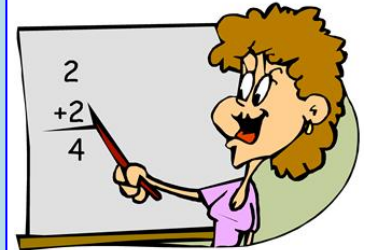


MATHEMATICS PEDAGOGICAL CONTENT KNOWLEDGE

**Project Title: Knowledge for Teaching Primary Mathematics
(the MPCK project)**

Research Questions:

1. What are significant components of MPCK and how do we measure MPCK for primary mathematics teachers?
2. How does MPCK develop during teacher preparation courses?
3. How do MPCK-in-action practices affect student performance?



Team Members

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Deliverables/Findings:

- ♣ MPCK Instrument – 4 key components
 - (a) Own understanding of mathematical structure and connections
 - (b) Knowledge of a range of presentation of concepts for purpose of explanation,
 - (c) Ability to analyse the cognitive demands of mathematical tasks on learners and
 - (d) Ability to understand and take appropriate action for pupil learning difficulties and misconceptions
- ♣ Significant differences between MPCK levels at beginning and end of teacher preparation courses
- ♣ Key MPCK-in-action Practices that Maths HODs find effective
 - in general, school mathematics HODs valued practices which promote understanding of concepts and which enhance pupils' attitude towards Mathematics rather than those which only concentrate on developing quick and accurate computational and procedural skills

List of Publications and Conference papers:

1. Lim-Teo, S.K., Chua, K.G. & Yeo, J.K.K. (2011). Perceptions of School Mathematics Department Heads on Effective Practices for Learning Mathematics. In Li, Y. & Kaiser, G. (Eds.), *Expertise in Mathematics Instruction* (pp. 221-242). New York: Springer.
2. Yeo, K.K.J. (2008 June), Teaching Area and Perimeter: Mathematics-Pedagogical-Content Knowledge-in-Action. Paper presented at MERGA 31 Conference, Brisbane, Australia.
3. Cheang, W. K., Yeo, K. K. J., Chan, C. M., Lim-Teo, S. K., Chua, K. G., & Ng, L. E. (2007). Development of mathematics pedagogical content knowledge in students teachers. *The Mathematics Educator*, 10(2), 27-54.
4. Lim-Teo, S.K., Chua, K.G., Cheang, W.K. & Yeo, K.K.J. (2007). The development of Diploma in Education student teachers' Mathematics pedagogical content knowledge. *International Journal of Science and Mathematics Education*, 5(2), 237-261.
5. Lim-Teo, S.K. (2006, November). The Measurement of Mathematics Pedagogical Content Knowledge. Paper presented at Asia-Pacific Education Research Association Conference, Hong Kong.
6. Cheang, W.K., Yeo, K.K.J. & Chan, C.M.E. (2006, November). Development of Mathematics Pedagogical Content Knowledge in Pre-service Teachers. Paper presented at Asia-Pacific Education Research Association Conference, Hong Kong.
7. Lim-Teo, S.K., Chua, K.G. & Ng, L.E. (2006, November). MPCK variables valued by schools' Mathematics department heads. Paper presented at Asia-Pacific Education Research Association Conference, Hong Kong.
8. Lim-Teo S. K., Chua K. G., Cheang, W. K. and Yeo, K. K. J. (2005, May). Development of student teachers' mathematics pedagogical content knowledge. Paper presented at CRPP Conference, Singapore.
9. Quigley, M., Lim-Teo, S.K. & Fan, L.H. (2003, June). Teacher trainees' mathematics-specific pedagogical content knowledge – a snapshot. Paper presented at Asia-Pacific Conference on Education, Singapore