

# Developing new mathematics teacher learning in schools and the STEM agenda

*Taking forwards discussions from Hamburg, July 2016*

*10 mins: Report back*

*24 Mins: 3 minute start up responses to key questions*

*12 Mins: Plenary, key gaps and next steps.*



Reason for this discussion is because of a strange apparent misalignment of two simultaneous teacher education policies in Australia

- need for more teachers of STEM, particularly but not only in primary schools
- expectation that schools play an increasing part in teacher education.

How can schools, themselves short of teachers of maths and science and technology prepare new teachers in these fields?

Aim of discussion group is to bring together international perspectives about this central question and for us to learn from countries who have addressed it.



# Key questions & 3 Minute Start Up

- How do we support our teachers more in mathematics and science?
- What does STEM teaching and learning look like? What are inter/disciplinary expectations of STEM agenda for teachers of maths and science? Can we articulate in and between country differences?
- How do we provide opportunities to experience expert teaching?
- How can effective partnerships be developed that connect national priorities with practice on the ground?



# Stimulus presentations

- Lesson Study
- Action learning
- Mindset and performance
- Out-of-field as a resource and as contested concept;
- 'Mathematics subject enhancement and in-depth mathematical understanding' through in-service PD
- 'Choose Maths' initiative and scaling up



# Some thoughts and reminders

Professional development for teachers (Joubert & Sutherland, 2009):

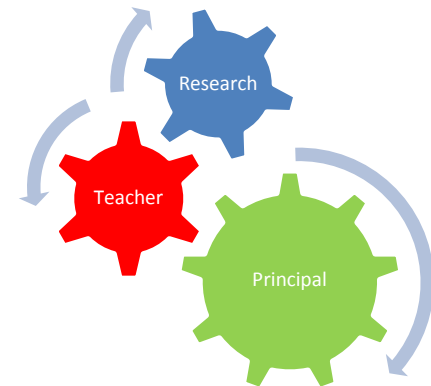
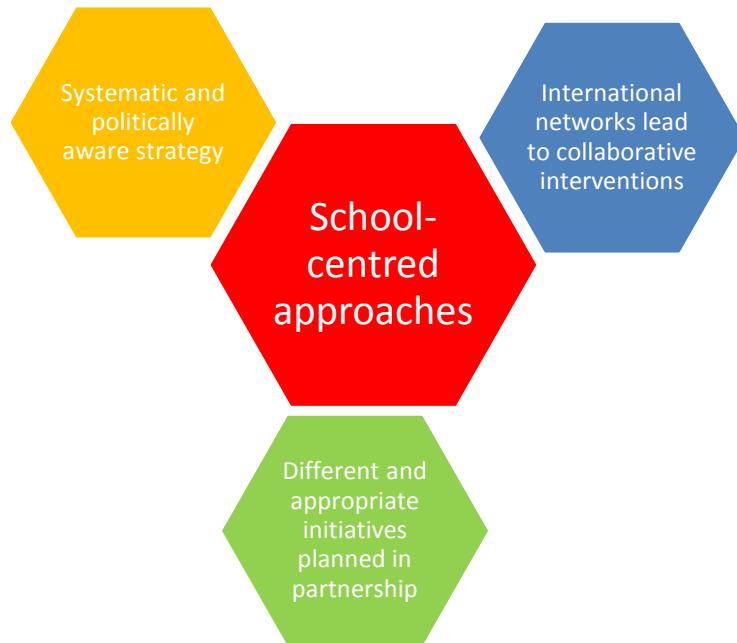
- Sustained over time
- Is collaborative
- Knowledge creation is integral

STEMness of STEM

- Authentic problemsolving
- Collaborative
- Builds on scientific, mathematical and design principles and reasoning.

## To take forwards

- Importance of paying attention to the power of international collaborations;
- The problem is recurring and so political networks are very important.
- Experience (e.g. in the UK) suggests the need for strategy to maintain an unerring focus on mathematics;
- Evidence –based interventions; developing excellence in teaching mathematics across all phases of education by sharing knowledge and practice;
- Commitment to placing teachers' needs and goals at the core;
- Commitment to working in partnership to influence policy & practice.



Can successful local practice be 'scaled up', i.e., is anything generalizable from the specifics of local experience?



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