

Framing a Mathematics Teacher for the 21st Century Classroom: What? How? Why?

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Short Description of the Workshop:

Students and learning are changing faster than how classrooms are adapting to it. The 21st century classrooms challenges teachers with the dilemma that routine, rule-based knowledge, which is easiest to test, is also easiest to digitize, automate and outsource; thus expecting mathematics teachers to bring in creativity, problem solving and critical thinking in the classroom (Schleider, 2012). But what does this really mean from a teacher's perspective? How much do mathematics teachers today understand 21st century classroom and quality learning? High quality learning comes from high quality teaching; and investing in teacher's professional capital yields good results (Hargreaves and Fullan, 2012). Hence, how can we develop a teacher's professional capital? This workshop will share some teacher professional development practices in Japan, Philippines, Singapore and USA, and provide participants from various countries an opportunity to learn about, raise questions on and reflect on their own teacher education or professional development practices. The workshop's key ideas are (1) discussing the content, pedagogical and cultural expectations and its gap with current classroom practices or teacher education beliefs, and (2) the possibility of constructing a more universal framework for mathematics teacher education preparation and/or professional development practices for the 21st century mathematics classroom.

Planned structure:

Planned timeline	Topic	Material/Working format / Presenter
Tuesday (5 mins)	Introduction of the Discussion Group's Rationale, Aims, Flow of Discussion and Expected Output from the Participants	P. Seshaiyer, Flow of Activities Handout
Tuesday (50 mins)	Presentation of mathematics teacher education practices and frameworks of Japan, Philippines, Singapore and USA	Sharing by each member of the team
Tuesday (20 min)	In smaller groups, there will be a discussion about: 1. expectations, challenges and context of mathematics teachers in their own communities/countries as they handle the 21st century learners 2. silences and gaps between intended practices and carried out practices in a mathematics classroom	Small group discussions; team members facilitating; handouts
Tuesday (15 mins)	Presentation of the groups' summary based on the discussion, reflection by participants, closing	Reflection worksheets
Friday (30 mins)	a. Summary of Tuesday Session b. Discussion of Session 2 goals c. Actual Practices of Professional Development for Mathematics Teachers from Japan, Philippines, SG and USA	All members of the team, PPT presentations
Friday (30 mins)	Smaller group discussions on: 1. What and how can mathematics teacher's education frameworks be improved? Which practices must be kept? 2. What factors should be considered in training mathematics teachers for the 21 st century learners?	Small group discussions; team members facilitating; handouts
Friday (20 mins)	Presentation of the groups' summary based on the discussion, reflection by participants	Reflection worksheets
Friday (10 mins)	Wrap up and Summary	T. T. Lam

References

- Hargreaves, A. & Fullan, M. (2012). *Professional capital: Transforming teaching in every school*. New York, NY: Teachers College Press.
- Schleider, A. (2012), Ed., *Preparing Teachers and Developing School Leaders for the 21st Century: Lessons from around the World*, OECD Publishing. <http://dx.doi.org/10.1787/9789264-xxxxxx-en>