International Cooperation on the Development of the Regional Mathematics Curriculum Standards: The Case of Southeast Asia

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Purpose:

- Sharing the challenges and issues encountered
- Contributions of collaborating agents
- Lessons learned
- Concluding remarks

Southeast Asia Minister of Education Organisation (SEAMEO), 1965
11 Member Countries (2010)

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SEAMEO Secretariat

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SEAMEO Education Agenda (2015-2035) with 7 priority Areas:
For improved quality education in the region

Priority # 7:
Adapting a 21st Century Curriculum for the region

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Aim to pursue a radical reform through systematic analysis of knowledge, skills and values by integrating regional curriculum standards

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RECSAM
Project SEA-BES:CCRLS in mathematics and science (2015-2017)

Who were the contributing agents?

SEAMEO Secretariat

- Setting directions and project approval

- **RECSAM Team**
- **Consultant**

- Coordinating and Writing
- Consultant: Review, critiques, & guidance, suggestions

30 Malaysian Teachers & Educators

- Comparison and mapping, P I
- Drafted initial Standards, P II

11 Curriculum Specialist from 11 SEAMEO countries

- Sharing of national curriculum & reform at P I
- Review of Draft Document, P III

- **8 International Experts**
- **16 APEC –LS Network**
- **7 Japanese Experts**

- Review & Critiques of Drafts in P III

- Collaborating agents contributed at different phases, I, II or III.
- Worked mainly during local workshops, regional workshops and one international workshop in Tsukuba (organized by the consultant)

Challenges & Issues

Phase 1: Comparison of Curriculum Standards and Mapping for Minimum Essentials

- Use only 6 curriculum standards translated to English (Mal, Brunei, Sin, Phi, Camb, Thai)
- Math terminologies (MAL) were used to find intersections as the minimum content needed.
- **Issues**: -No obvious intersection
  -Missing terms (ordinal, cardinal)
  -No well distinguished terms used
  -Topics in different domain (money)
  - Approach of teaching (proving Vs calculation & measurement)
  - Topics taught at different Grade

Primary Mathematics (Malaysia)												
	Topic Progression						Learning Objectives					
Topics	1	2	3	4	5	6	BRUNEI	SINGAPORE	PHILIPPINES	MALAYSIA	CAMBODIA	THAILAND
Domain1: NUMBERS AND OPERATIONS												
1. Read, write , count	/						/	/	/	/	/	/
2. Skip count	/						/			/		/
3. Mathematics symbols	/						/	/	/	/		/
4. Arrange, compare numbers	/						/	/	/	/		/
5. Ordinal, cardinal							/	/	/		/	

Mapping in the case of whole numbers for comparison of curriculums

Consultant:

- Mapping not appropriate
- Provide guidance & explanation
- Change the minimum essentials to benchmark against the 21st century curriculum standards of advance countries
- Change grading to key stage 1,2 & 3

Challenges & Issues

Phase 2: Setting Format for Writing the Standards under Benchmarking Framework

- Drafting of standards

Concerns: - Use minimum essentials of the 21^{s}century curriculum
- Terminologies not well defined
-Set same domain name for 3 key stages
- No obvious process skills
-Bias in content selection and description of standards
- Limited experience of collaborators

Consultant and RECSAM team:

- Major review to consider terminologies in curricula of advance countries
- Appropriate way of writing the standards to ensure process skills were embedded
- Strands were used
- Careful consideration to distinguish conceptual differences of terminologies

Challenges & Issues

Phase 3: Setting the Framework & Finalising the Document

- Consolidate the draft through feedback of questionnaire from all specialist of every member country
- Through discussion in a final meeting

Concerns: - specialists were confident on comparison but reserve comments on their own national curriculum
- Difficult to find a middle path for integration

I-experts & J-experts:

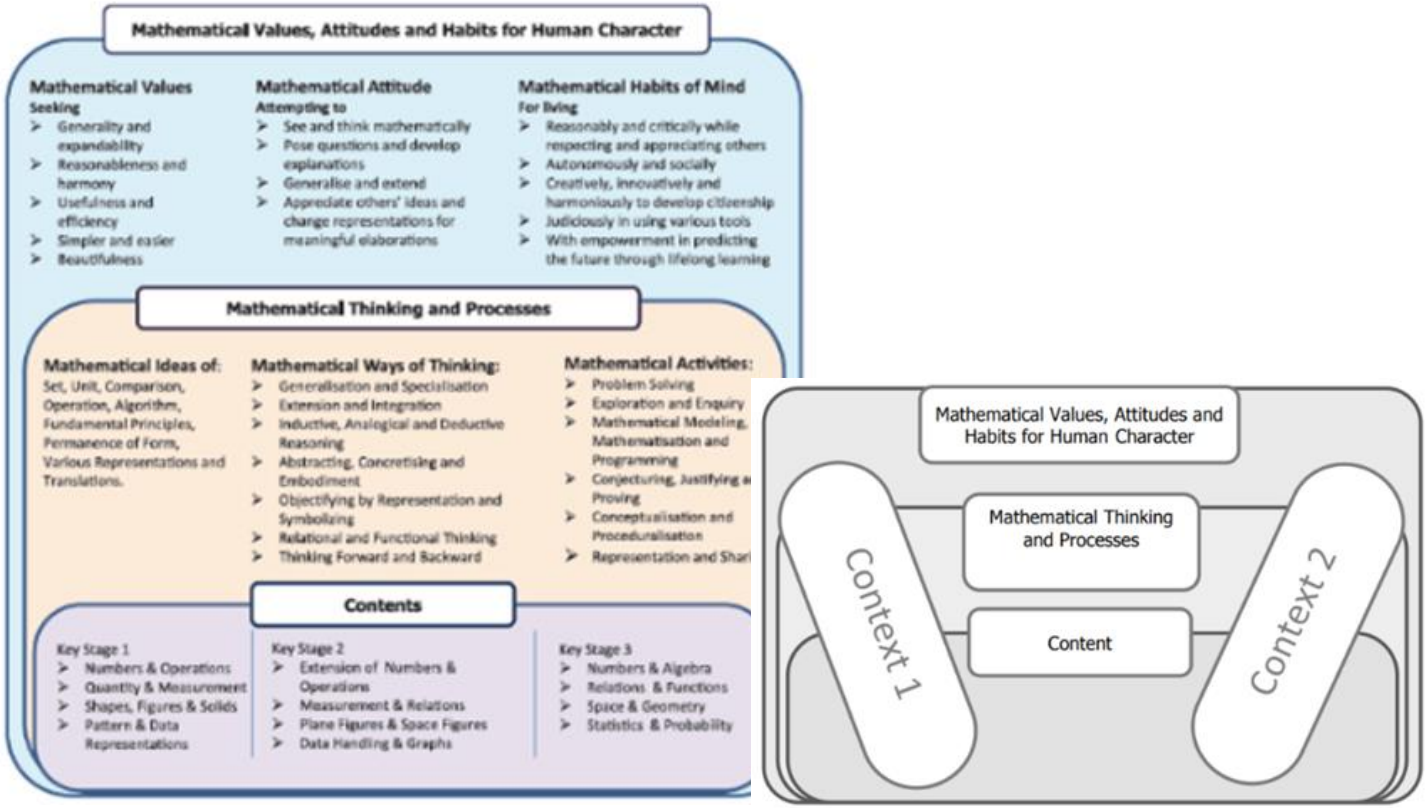
-clarify further the aims, objectives, roles and contents of standards.

Consultant and RECSAM team:

- Rewrite the standards under the agreement of the meeting in Tsukuba
- Specialist provide positive feedback
- APEC experts review & provided the critiques for improvement
- Process-humanity strand were added
- CCRLS framework was produced.

Resolving the challenges and Issues

- Discourse during local and regional meetings
- Narratives
- Critiques
- References on curriculum document
- Guidance & showing through examples
- No formal capacity building but a on-job learning, particularly from the consultant



SEABES CCRLS framework for Mathematics
(Mangao, Ahamad, Isoda, 2017; Gan, Isoda & Teh, 2021 revised)

Lessons Learned

1. Mapping was not appropriately applied.
   Core agents from member countries provide their shareable terminology for the region.

2. Sharing the reform issues are necessary to establish the format of writing
   eg. emphasis of mathematical value and attitude, and mathematical thinking skills

3. Participating teachers require specific training, broad curriculum knowledge and experience to write curriculum standards

4. Insufficient experience of collaborators gave rise to difficulty in interpreting terminologies for the curriculum

5. Teachers are curriculum user but not familiar with terminology and is the major variable to describe national curriculum

Lessons Learned

Other technical aspects:

6. Project should accompanied with explicit objectives , methods and workable implementation plan by the stakeholders
   The targeted audience/community of users need to be considered.

7. A project consultant and curriculum experts are crucially needed to support the project

8. Involvement of curriculum personnel with mandated authority from member countries are most crucial. Determine the degree of adoption, integration and reference of the curriculum standards for their national curriculum.

Lessons Learned

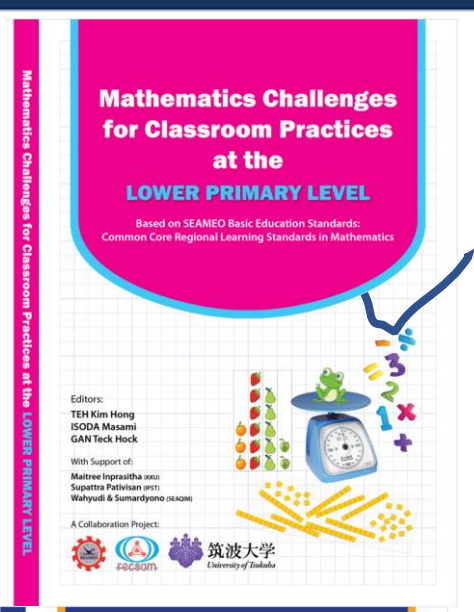
Challenges provide new ways forward:

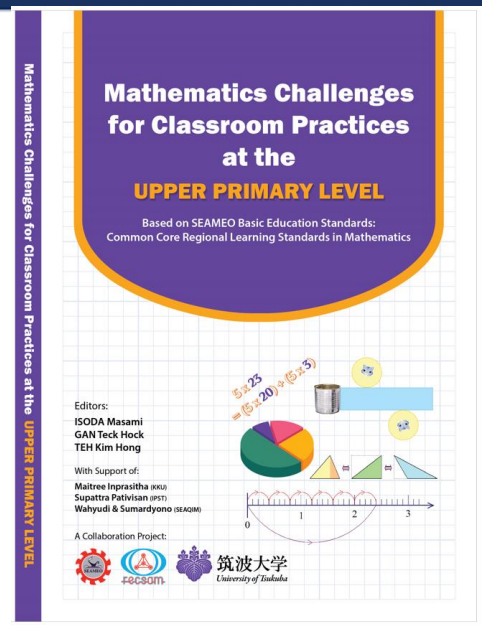
9. To promote wider usage of the curriculum standards, teachers' guidebook have been develop based on the Standards for classroom teaching
   (2 out of 3 books have been published).

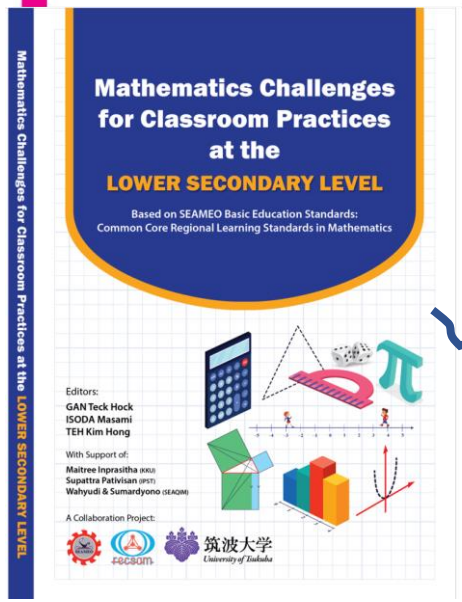
10. Revision of the Standards

11. Use of the Standards for teacher training in member countries

12. SEAMEO QITEP made use of CCRLS in Mathematics for MARWA project involving Diagnostic Assessment







Conclusion

- Challenges and issues can be avoided:
  - by setting clear work process,
  - methods,
  - direct support of knowledgeable curriculum specialists from all member countries

- Lessons learned - as reference curriculum development of similar nature.

Thank you