

Announcement of the online program for SEAMEO School Network (free of charge)

**Teaching Mathematics to Develop Mathematical Thinking as Higher Order Thinking:  
How do you teach? Why?**

**Provided by**

CRICED, University of Tsukuba, Japan: Affiliate Member of SEAMEO

**Lectured by**

Masami Isoda, Prof/PhD, University of Tsukuba, Japan

**With support of**

Maitree Inprasitha, Assoc. Prof/PhD., Narumon Changsri, Assis. Prof./PhD, and Nisakorn Boonsena, PhD. Khon Kaen University, Thailand  
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Teh Kim Hong, Ms., SEAMEO-RECSAM, Malaysia.  
Wahid Yuniarto, Mr., SEAMEO Qitep in Mathematics, Indonesia

**Course Summary**

The objective of this on-line lecture is to develop Mathematics Knowledge for Teaching with components of Pedagogical Content Knowledge and Subject Matter Knowledge for all school levels by using materials for elementary school mathematics up to the 3<sup>rd</sup> grades. It is provided under the principle to develop mathematical thinking as a higher order thinking which enable students who learn mathematics by and for themselves by using the Japanese Problem Solving Approach with referring Gakko Toshō Textbooks which are used in Indonesia and Thailand.

Every class is provided the following questions to participants: How do you teach and why? 'How?' is the pedagogical question to replying the 'Why?' which is answered through the learning of Pedagogical Content Knowledge and Subject Matter Knowledge. For secondary school teachers, it is an opportunity to know how their teaching materials are aligned and well-related with elementary school mathematics. Even through the lecture provide the simple and joyful ideas for mathematical knowledge for teaching at elementary school level teachers, the math educators, mathematicians and teacher trainers are also provided the opportunity to reconsider how we should reform our teacher education program.

**Course Content, Registration and Certifications**

It is a free program for SEAMEO priority areas #5 for 'Revitalizing Teacher Education' and #7 for 'Adopting 21<sup>st</sup> Century Curriculum'. CRICED, University of Tsukuba, Japan, provides the certifications to participants depending on the completion of ordered stages.

At the end of each lesson we ask participants a short question for knowing how the lesson worked and send the URL for every class. Answered participants will receive the notice for next class URL. This feedback from participants is used for evaluation of the program itself, and also, it is used for the attendance confirmation but not as evaluation of participants.

### Course Roadmap

<b>TOPIC 1: INTRODUCTION</b>	L1: Introductory discussion to develop mathematical thinking (24/03/21)		
<b>TOPIC 2: NUMBERS</b>	L2: How to introduce number (27/03/21)	L3: What is number (31/03/21)	
<b>TOPIC 3: ADDITION AND SUBTRACTION</b>	L4: How to Introduce addition (03/04/21)	L5: What is addition (07/04/21)	
	L6: How to introduce subtraction (10/04/21)	L7: What is subtraction (14/04/21)	
<b>TOPIC 4: EXTEND NUMBER TO 100 WITH ADDITION AND SUBTRACTION USING COLUMN FORM</b>	L8: How to extend number to more than 10 (17/04/21)	L9: How to extend addition (21/04/21)	L10: How to extend subtraction (24/04/21)
	L11: How to extend number to more than 100 (28/04/21)	L12: How to introduce column addition (01/05/21)	L13: How to introduce column subtraction (05/05/21)
<b>TOPIC 5: MULTIPLICATION</b>	L14: How to introduce multiplication (08/05/21)	L15: How to develop multiplication table (12/05/21)	
	L16: What is the multiplication table (15/05/21)	L17: How to introduce column multiplication (19/05/21)	
<b>TOPIC 6: DIVISION</b>	L18: How to introduce division (22/05/21)	L19: How to extend division with remainder (26/05/21)	
<b>TOPIC 7: REFLECTIVE DISCUSSION</b>	L20: Panel-Reflective discussion for summary (29/05/21)		

Every class will be 20-30 minutes: Wednesday and Saturday Evening from 24 March 2021. Participants will be able to attend each lesson until next lesson on the roadmap, sequentially.

**Application form (Deadline 21 March 2021):** <https://forms.gle/CGCch1BEdXNngcrU9>

Every lesson uses the learned knowledge from the previous lesson. Thus, sequential participations are necessary. CRICED will provide the following certifications to the participants.

Certification for Stage 1: Completed up to Topic 3 (Lesson 7)

Certification for Stage 2: Completed up to Topic 4 (Lesson 13)

Certification for Stage 3: Completed up to Topic 5 (Lesson 17)

Complete Certification of the course: Completed up to Topic 7 (Lesson 20)

Materials:

Major materials such as power-point files will be provided for the registered participants.

#### Contact

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Question form for the course: <https://forms.gle/LAQHKzmq3fjn1r1n6>

#### References

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- Masami Isoda, David Tall (2019). *Mathematics for Junior High School (3 vols.)*. Tokyo, Japan: Gakko Tosho.
- Dominador Dizon Mangao, Nur Jahan Ahmad, Masami Isoda edited (2017). *SEAMEO basic education standards (SEA-BES): Common core regional learning standards (CCRLS) in mathematics and science*. Penang, Malaysia: SEAMEO-RECSAM, [http://www.recsam.edu.my/sub\\_sea-bes/images/docs/SEAMEO-ASEAN-Curriculum-SEABES-CCRLS-Standards.pdf](http://www.recsam.edu.my/sub_sea-bes/images/docs/SEAMEO-ASEAN-Curriculum-SEABES-CCRLS-Standards.pdf)
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