

Title:

**Mathematics Education to Develop Students Agency:
Problem Solving Approach, Shape & Figure, Measurement, and Pattern & Data**
‘Teaching Mathematics to Develop Mathematical Thinking as Higher Order Thinking: How do you teach? Why?’ III

Provided by

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

Lectured by

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

With support and contribution of (tentative)

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Course Summary

On OECD Education for 2030 (2019), Student Agency means students who ‘learned how to learn’. For this issue, the objective of this on-line lecture is teacher education to develop student who learn mathematics by and for themselves with learning terminology of mathematical thinking. On the past two courses, the first course focused on the introduction of numbers and operations, and the second course focused on fractions and proportionality. Both courses were illustrated by the curriculum and learning standards SEA-BES: CCRLS, which provides basic ideas of mathematics curriculum; and the task sequences which was illustrated by the English Edition of Gakko Tosho Textbook using Japanese Problem Solving Approach because its adapted editions have been used in Thailand, Mexico, Papua New Guinea, Chile and Indonesia and it well illustrates the standards. Both courses provided the terminology which is necessary to distinguish conceptual differences for designing task-sequence in each lesson by explaining what’s learned and what should be learned on the lesson.

The new course, as Part III, focuses on Problem Solving Approach and terminology of all remaining strands: Shapes & Figures (Geometry), Measurement, Finding Pattern and Data Handling on the same framework.

Course Content, Registration and Certifications

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

Each online lecture will be provided on a consecutive sequence based on the course roadmap. Participants cannot skip any lesson because each lesson uses ideas which were already discussed. At the end of each lesson we ask participants a short questionnaire for knowing how the lesson worked. Only the participants that answer the questionnaire will receive the URL for the next lecture. This feedback from participants is used for evaluation of the program itself and as attendance confirmation, but not as an evaluation of the participants.

Course Roadmap for Part III

Topic	Title of Lesson	Schedule
1. Problem Solving Approach	1. Variation: Teaching Approaches for What	May 28 th , 2022
	2. Open Approach: Case of Thailand	June 4 th , 2022
	3. Problem Solving Approach and Task Sequence	June 11 th , 2022
	4. Dialectic Approach and Task Sequence	June 18 th , 2022
2. Shape & Figure (Geometry)	5. Difference of Shape and Figure	June 25 th , 2022
	6. Figure and Attribute	July 2 nd , 2022
	7. Plane Figure and Properties	July 9 th , 2022
	8. Solid and Perspectives	July 16 th , 2022
3. Measurement	9. How to introduce the unit for measurement	July 23 rd , 2022
	10. Length and Mass (Weight)	July 30 th , 2022
	11. Area and Volume	August 6 th , 2022
	12. Time, Angle and Others (rate and ratio)	August 13 th , 2022
4. Pattern and Data	13. Functional Thinking: How to find the pattern	August 20 th , 2022
	14. Data Handling and Visualization of Data	August 27 th , 2022

	15. Various Meaning of Probability	September 3 rd , 2022
5. Summary	16. Mathematical Thinking and Activities	September 10 th , 2022

All the lessons will begin at Saturday evening from **19:00 (Japan time GMT+9)** through a live streaming via YouTube. Each lesson will be approximately 50 minutes long. CRICED will provide certifications to the participants in the following way:

Certification for Stage 1: Completed up to Topic 1 (Lesson 1-4)

Certification for Stage 2: Completed up to Topic 2 (Lesson 1-8)

Certification for Stage 3: Completed up to Topic 3 (Lesson 1-12)

Certification for Stage 4: Completed up to Topic 4 (Lesson 1-15)

Complete Certification of the course: Completed up to Topic 5 (Lesson 1-16)

Registration form (Deadline May 27th, 2022 at 15:00 Japan time (GMT+9)):

<https://forms.gle/ANAUzngEh2xvdTjD9>

Materials:

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

Contact

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Inquiry form for the course: <https://forms.gle/Nj5kNgQocR8S1WjQ9>

References & Source

Masami Isoda with collaborators (2021). Teaching Mathematics to Develop

Mathematical Thinking as Higher Order Thinking: How do you teach? Why?

https://www.criced.tsukuba.ac.jp/en/seameo_online-program.html

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