

筑波大学
University of Tsukuba

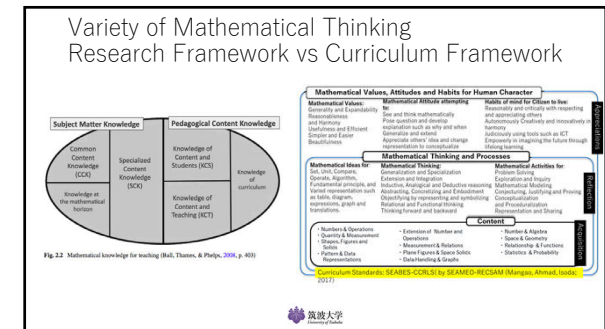
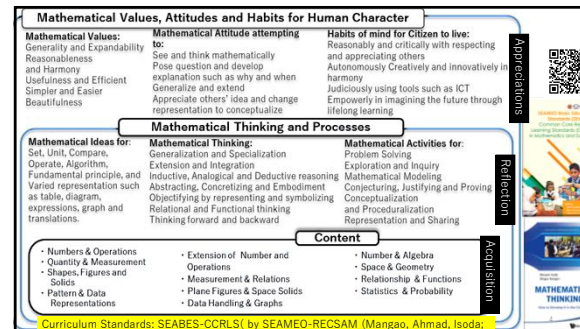
Free Program for SEAMEO School Network
from the University of Tsukuba, Affiliate Member of SEAMEO (lesson 1)

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

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Adopting a 21st
Century Curriculum

Revitalising
Teacher Education



ere a certain number of origami sheets. When 7 sheets were
e number of sheets became 35. Let's answer the following

Let's find monsters.

Monsters

that the original
r is 35.

total number

7 sheets

Gakko Toshō (2020). Study with your friends: Mathematics et's for Elementary School Series

Way to see and think.

The reason to deduce an addition sentence can be understood by the number line or addition for total number.

Gakko Toshō: Study with your friends: Mathematics for Elementary School Series

คณิตศาสตร์ 2010 Edition

2005 Edition

Isoda, M., Tall, D. (2019). Junior High School Mathematics Textbook, Gakko Toshō

Primary School Textbook
2021 Curriculum
2020 Japanese Edition
2005 English Edition
2010 Thai Ed.
2012 Mexico Ed.
2010 Chile Pro. Ed.
2011 Curriculum
2011 Japanese Edition
2011 English Edition
2018 Papua N.G. Ed.
2020 Indonesian Ed.
2020 Chile Ed.
2019 Japanese Edition
2019 English Edition
2020 Curriculum
2020 Japanese Edition
2020 English Edition

Mathematical Thinking

- General Objective
 - Principles for Curriculum and Textbook Writers
- Specified in the Textbook
 - Embedded as task sequence by Authors
 - Rivaled by teachers and students through using
- Planned process by Teacher
 - Teachers' thinking embedded into process by given tasks and sequences
 - Considered how it will be possible to appear from students
- Actual Thinking by students in classroom
 - Students thinking in the classroom which explained by them
 - Teachers observe and assess them
- Discussed by teachers after observation of Class
- Mathematical Thinking as Data based on Researchers' Framework for Journals on Social Scientific Studies

Terminologies for Curriculum Designers

Terminologies used by teachers to develop students' mathematical thinking

References

Masami Isoda, Raimundo Olfo, edited (2020). *Teaching Multiplication with Lesson Study: Japanese and Ibero-American Theories for International Mathematics Education*. Cham, Switzerland: Springer. (Open Access)

Masami Isoda, Aki Murata (2020). *Study with your friends: Mathematics for Elementary School (12 vols.)*. Tokyo, Japan: Gakko Toshō.

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ISODA Masami, TEH Kim Hong, GAN Teck Hock (in printing). *Mathematics Challenges for Classroom Practices at the Upper Primary Level*. Penang, Malaysia: SEAMEO-RECSAM

GAN Teck Hock, ISODA Masami, TEH Kim Hong (20aug21). *Mathematics Challenges for Classroom Practices at the Lower Secondary Level*. Penang, Malaysia: SEAMEO-RECSAM

TOPIC 1: INTRODUCTION	L1: Introductory discussion to develop mathematical thinking		
TOPIC 2: NUMBERS	L2: How to introduce number	L3: What is number	
TOPIC 3: ADDITION AND SUBTRACTION	L4: How to introduce addition	L5: What is addition	
	L6: How to introduce subtraction	L7: What is subtraction	
TOPIC 4: EXTEND NUMBER TO 100 WITH ADDITION AND SUBTRACTION USING COLUMN FORM	L8: How to extend number to more than 10	L9: How to extend addition	L10: How to extend subtraction
	L11: How to extend number to more than 100	L12: How to introduce column addition	L13: How to introduce column subtraction
	L14: How to introduce multiplication	L15: How to develop multiplication table	
TOPIC 5: MULTIPLICATION	L16: What is the multiplication table	L17: How to introduce column multiplication	
TOPIC 6: DIVISION	L18: How to introduce division	L19: How to extend division with remainder	
TOPIC 7: REFLECTIVE DISCUSSION	L20: Panel-Reflective discussion for summary		

 香港中文大學

References

SEAMEO Basic Education Standards (SEA-BES): Common Core Regional Learning Standards (CCRLS) in Mathematics and Science

Mathematical Thinking: How to Develop it in the Classroom

Teaching Multiplication with Lesson Study

Mathematics Challenges for Classroom Practices at the Lower Primary Level

Mathematics Challenges for Classroom Practices at the Upper Primary Level

Mathematics Challenges for Classroom Practices at the Lower Secondary Level