KOREA 2025

EARCOME9

The 9th ICMI-East Asia Regional Conference on Mathematics Education

Re: Visiting the Essence of Mathematics Education in the Era of Digital Transformation

JUL. 18 FRI ~ 22 TUE, 2025

Seoul National University, Siheung Campus

PROGRAM

Co-Host

대한수학교육학회
The Korean Society of Educational Studies in Mathematics

한국수학교육학회
The Korean Society of Mathematical Education

KOREA 2025 수학

EARCOME9

The 9th ICMI-East Asia Regional Conference on Mathematics Education

CONTENTS

Welcome Message

It is with great pleasure that we welcome you to the 9th ICMI-East Asia Regional Conference on Mathematics Education (EARCOME 9), held from July 18 to 22, 2025, at Seoul National University's Siheung Campus in South Korea.

EARCOME has become a cornerstone for mathematics education in East Asia, bringing together researchers, educators, and practitioners from across the region and beyond. Its origin can be traced to the South East Asia Conferences on Mathematics Education (SEACME), which began in 1978. Since the first official EARCOME in 1998, the conference has evolved into a triennial gathering—except during ICME years—fostering collaboration, scholarly exchange, and innovation in mathematics education.

The theme for EARCOME 9, "RE: Visiting the Essence of Mathematics Education in the Era of Digital Transformation," invites us to reflect deeply on foundational principles in mathematics education amid the profound shifts driven by digital technology. In this transformative age, questions of purpose, practice, and pedagogy are more urgent than ever.

As the International Program Committee Chair and Co-Chair, we are honored to support a program that reflects the diverse voices and vibrant scholarship across East Asia and beyond. This year's conference is co-hosted by The Korean Society of Educational Studies in Mathematics (KSESM) and The Korean Society of Mathematics Education (KSME). It includes an exceptional lineup of plenary lectures, invited presentations, topic study groups, and practice-oriented sessions for practitioners.

We extend our deepest gratitude to the Local Organizing Committee, co-chaired by Ho Kyoung Ko (Ajou University), GwiSoo Na (Cheongju National University of Education), and Jinho Kim (Daegu National University of Education), whose dedication and leadership have been instrumental in realizing this event. We also acknowledge the many LOC members and volunteers who have contributed their time and expertise to make EARCOME 9 a meaningful and enriching experience.

We are especially grateful for the generous support of the National Research Foundation of Korea (NRF), funded by the Ministry of Education (MOE), under Grant No. NRF-2025S1A8A4A01014320. Their support has been crucial in making this conference possible.

We warmly welcome you to EARCOME 9 and invite you to engage fully in the discussions, share your insights, and help shape a forward-looking, inclusive vision for mathematics education. We hope this conference will not only deepen your academic inquiry but also strengthen our shared commitment to building a collaborative and culturally grounded mathematics education agenda in East Asia.

Oh Nam Kwon
Chair, International Program Committee
Seoul National University, South Korea

Berinderjeet Kaur
Co-Chair, International Program Committee
National Institute of Education, Singapore

	July 18(Fri)	July 19(Sat)	July 20(Sun)
08:30~09:00		Networking	Networking
09:00~09:30		Plenary Panel Discussion 1 (CH)	Plenary Lecture 2 (CH)
09:30~10:00			
10:00~10:30		Coffee Break	Coffee Break
10:30~11:00		TSG1 (#109) / TSG2-1 (#CHI-A) / TSG2-2 (#CHI-C) / TSG3 (#102) / TSG4-1 (#603) / TSG4-2 (#604) / TSG5 (#806) / TSG6-1 (#605) / TSG6-2 (#606) / TSG7 (#806-1) / TSG8 (#103) / TSG9 (#406) / TSG10 (#609)	TSG1 (#109) / TSG2-1 (#CHI-A) / TSG2-2 (#CHI-C) / TSG3 (#102) / TSG4-1 (#603) / TSG4-2 (#604) / TSG5 (#806) / TSG6-1 (#605) / TSG6-2 (#606) / TSG7 (#806-1) / TSG8 (#103) / TSG9 (#406) / TSG10 (#609)
11:00~11:30			
11:30~12:00			
12:00~12:30			
12:30~13:00		Lunch/Networking	Lunch/Networking
13:00~13:30	Exhibition / Registration	Exhibition	Exhibition
13:30~14:00			
14:00~14:30		Invited Lecture 1-1 (CH) / Invited Lecture 1-2 (#109) / Invited Lecture 1-3 (#806) / Invited Lecture 1-4 (#806-1)	Invited Lecture 2-1 (CH) / Invited Lecture 2-2 (#109) / Invited Lecture 2-3 (#806) / Invited Lecture 2-4 (#806-1)
14:30~15:00			
15:00~15:30		Poster Presentation 1 (1F Lobby)	Poster Presentation 2 (1F Lobby)
15:30~16:00			
16:00~16:30		Coffee Break	Coffee Break
16:30~17:00	Opening Ceremony (CH)	WG1-1 (#109) / WG1-2 (#606) / WG1-3 (#605) / WG1-4 (#806-1) / SSG1-1 (CH) / SSG1-2 (#806) / SSG1-3 (#603) / SSG1-4 (#604)	WG2-1 (#109) / WG2-2 (#806-1) / WG2-3 (#605) / WG2-4 (#606) / SSG2-1 (CH) / SSG2-2 (#806) / SSG2-3 (#603) / SSG2-4 (#604)
17:00~17:30	Plenary Lecture 1 (CH)		
17:30~18:00			
18:00~20:00	Welcome Reception (2F Lobby)		

*** TSG** | Topic Study Group
*** WG** | Working Group
*** SSG** | Special Sharing Group

***CH** | Convention Hall

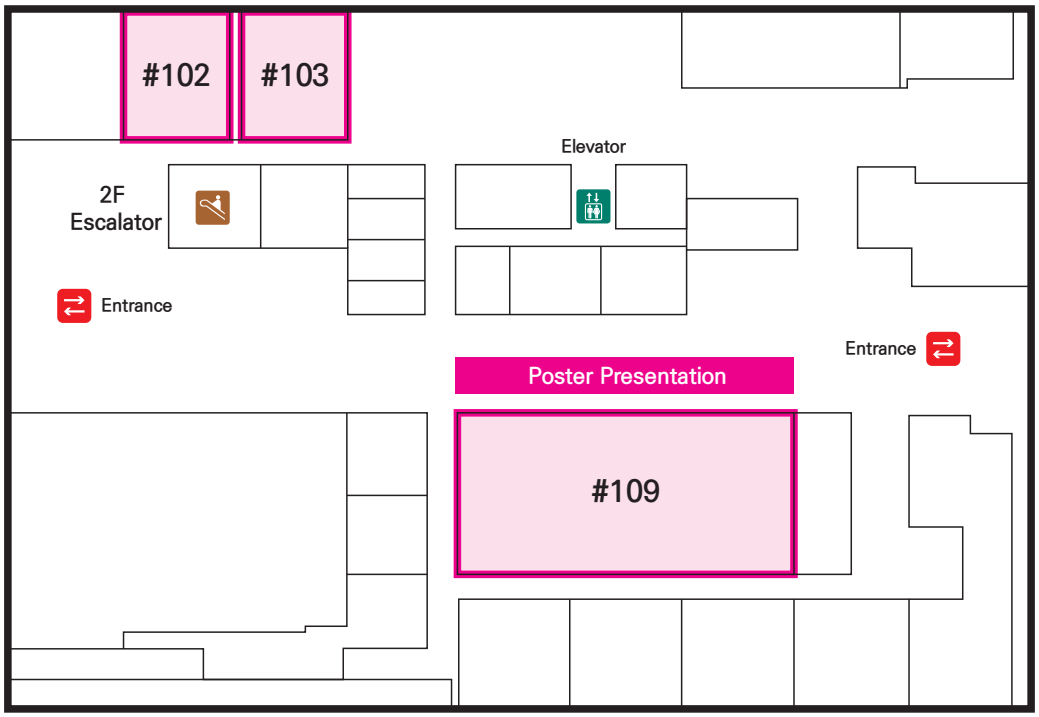
Program at a Glance

KOREA2025 EARCOME9
The 9th ICMI-East Asia Regional Conference on Mathematics Education

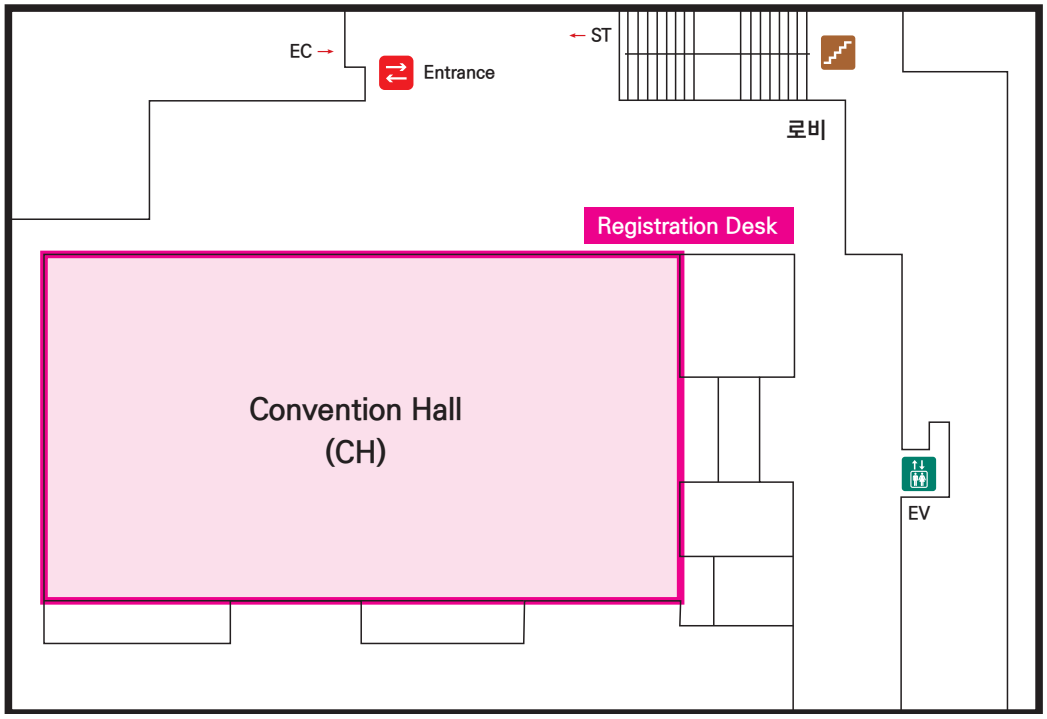
	July 21(Mon)													July 22(Tue)			
08:30~09:00	Networking													Networking			
09:00~09:30	Exhibition	Plenary Lecture 3 (CH)												Exhibition	Invited Lecture 3-1 (CH)	Invited Lecture 3-2 (#109)	Invited Lecture 3-3 (#806)
09:30~10:00																	
10:00~10:30		Coffee Break													Coffee Break		
10:30~11:00		TSG 1 (#109)	TSG 2-1 (#CHIA)	TSG 2-2 (#CHIC)	TSG 3 (#102)	TSG 4-1 (#603)	TSG 4-2 (#604)	TSG 5 (#806)	TSG 6-1 (#605)	TSG 6-2 (#606)	TSG 7 (#806-1)	TSG 8 (#103)	TSG 9 (#406)	TSG 10 (#609)		Plenary Lecture 4 (CH)	
11:00~11:30																	
11:30~12:00															Closing (CH)		
12:00~12:30																	
12:30~13:00		Lunch/Networking IPC & AB Meeting (#102)															
13:00~13:30																	
13:30~14:00																	
14:00~14:30		Plenary Panel Discussion 2 (CH)															
14:30~15:00																	
15:00~15:30		Coffee Break															
15:30~16:00		WG 3-1 (#109)	WG 3-2 (#806-1)	WG 3-3 (#605)	WG 3-4 (#606)	SSG 3-1 (CH)					SSG 3-2 (#806)						
16:00~16:30																	
16:30~17:00																	
17:00~17:30																	
17:30~18:00																	
18:00~20:00		Conference Banquet (Location: Gyeongwonjae)															

Floor Plan

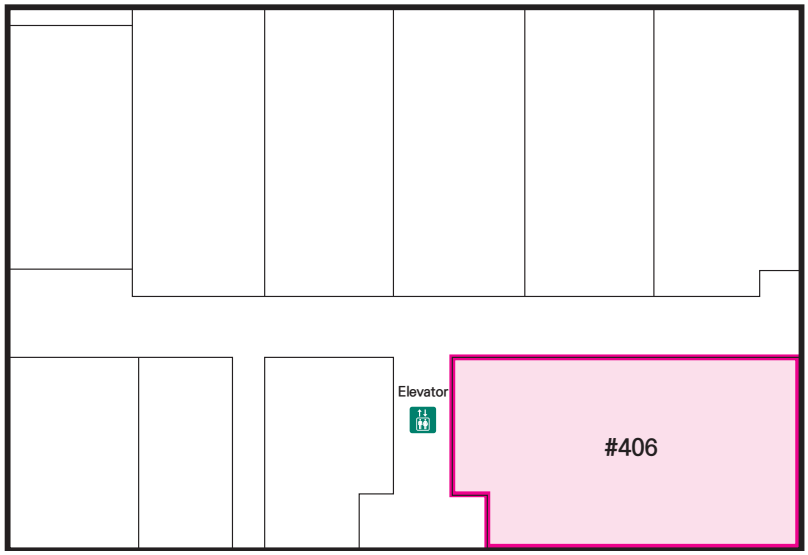
1st Floor



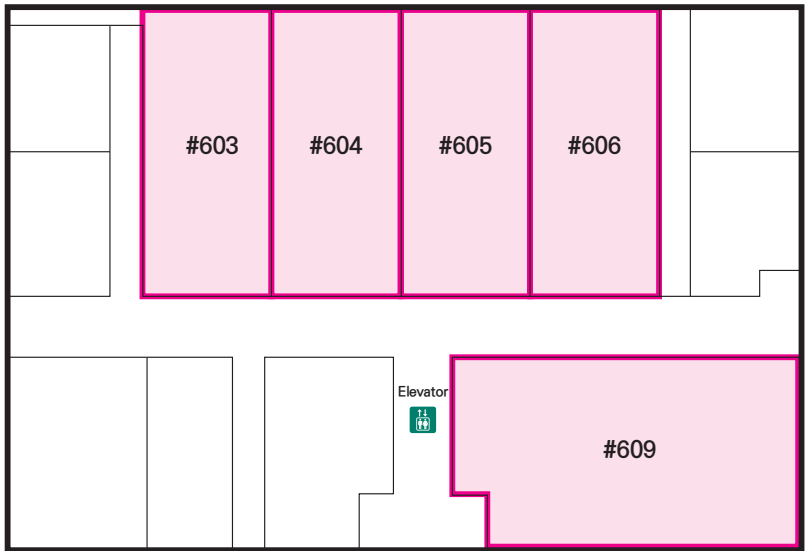
2nd Floor



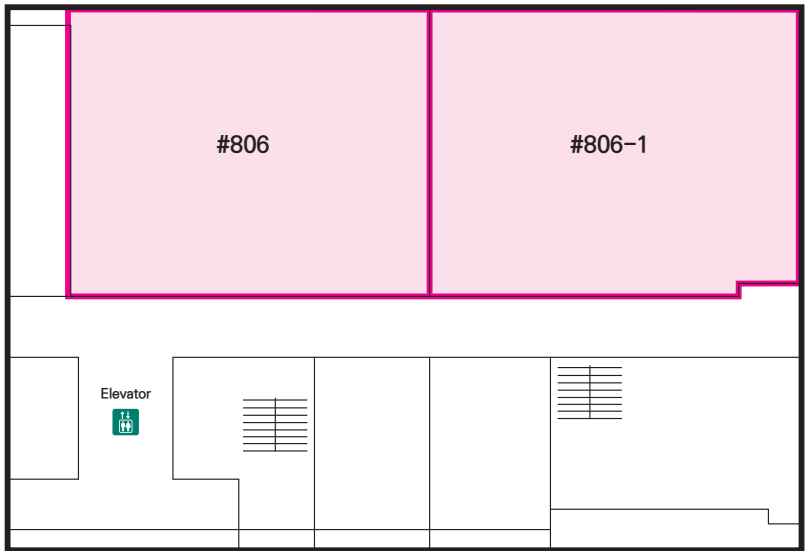
4th Floor



6th Floor



8th Floor



Official & Social Program

Opening Ceremony

Date	Time	Location
July 18 (FRI)	16:30 – 17:00 (KST)	Convention Hall

Conference Banquet

Date	Time	Location
July 21 (MON)	18:00 – 20:00 (KST)	Gyeongwonjae (200 Technopark Ro, Yeonsu-gu, Incheon)

Closing

Date	Time	Location
July 22 (TUE)	11:30 – 12:00 (KST)	Convention Hall

Opening Ceremony Performance

Sangji University Taekwondo Demonstration Team

The Sangji University Taekwondo Demonstration Team is dedicated to promoting Taekwondo, Korea's national martial art, to the world and enhancing the reputation and development of the Department of Taekwondo at Sangji University.

Founded in 2001, the team has produced numerous national representatives and achieved outstanding results in national competitions. Striving to embody both strength and character, its members continue to serve as exemplary Taekwondo practitioners.

We hope you enjoy the team's dynamic performance, including powerful techniques, board breaking, and Taekwondo aerobics.

Conference Banquet Performance

BATTUTA

Battuta, founded in the fall of 2013, is a new name for percussion performance.
With the harmony of traditional drum rhythms and modern drum beats, we present a spectacular performance featuring flying drums that soar over 50 meters above the ground.

I Performance Title and Description I

" KOREA FANTAGY "

- Act 1 (Land of Morning):
  Inspired by the "Banyasal Statue," designated as National Treasures No. 78 and No. 83, this act expresses the beauty of Korean culture.
- Act 3 (Resonance of the Soul):
  Portraying the so-called "Miracle on the Han River" and "Rose in the Trash Can," this act represents the dynamic spirit of the Korean people through stories of remarkable economic growth and the democratization movement.

Conference Banquet & Closing Performance

SNU Performing Arts Center

The SNU Center for the Performing Arts is an institution affiliated with the College of Music. It aims to push the boundaries of genres and existing norms to create innovative convergence artworks and performances that reflect the current era.
Based on collaborations with various institutions and genres, both on and off campus, our goal is to redefine space through de-staging. We strive to cultivate a cultural environment where individuals can encounter art in their everyday lives.
By collaborating with artists and art organizations in Korea and around the world, we are at the forefront of cultural integration.

1. Plenary Lectures

Plenary Lecture 1

July 18, Friday

17:00~18:00	**STAYING THE COURSE OR GOING WITH THE FLOW: ESSENCE OF MATHEMATICS EDUCATION IN EAST ASIA IN THE ERA OF DIGITAL TRANSFORMATION** Moderator: Berinderjeet Kaur (Nanyang Technological University) Speaker: Wee Tiong Seah (University of Melbourne)

Plenary Lecture 2

July 20, Sunday

09:00~10:00	**ADDRESSING ALIGNMENT OF COMPETENCY-BASED MATHEMATICS CURRICULUM: CHALLENGES AND OPPORTUNITIES** Moderator: Maitree Inprasitha (Khon Kaen University) Speaker: Yoshinori Shimizu (University of Tsukuba)

Plenary Lecture 3

July 21, Monday

09:00~10:00	**BRIDGING ACHIEVEMENT-MOTIVATION GAPS: A SYNERGISTIC APPROACH TO QUALITY MATHEMATICS EDUCATION** Moderator: Fou-Lai Lin (National Taiwan Normal University) Speaker: Kai-Lin Yang (National Taiwan Normal University)

Plenary Lecture 4

July 22, Tuesday

10:30~11:30	**A DESCRIPTIVE THEORY OF MATHEMATICS TEACHING: WHAT CAN THE THEORY OF PRACTICAL RATIONALITY SAY ABOUT THE IMPROVEMENT OF MATHEMATICS INSTRUCTION?** Moderator: Oh Nam Kwon (Seoul National University) Speaker: Patricio G. Herbst (University of Michigan)

2. Plenary Panel Discussions

Plenary Panel Discussion 1

Digital Transformation in Mathematics Classrooms: Rethinking Teaching and Learning in the AI Era

July 19, Saturday

09:00~10:00	Moderator: Lianghuo Fan (University of Macau)
	RETHINKING THE ROLE OF MATHEMATICS TEACHERS Yeap Ban Har (Pathlight School)
	RETHINKING MATHEMATICS EDUCATION IN THE AGE OF AI: **TOWARD A DIGITALLY TRANSFORMED FUTURE** Gabriele Kaiser (University of Hamburg)
	DIGITAL TRANSFORMATION IN MATHEMATICS EDUCATION: **RETHINKING CLASSROOM PRACTICES WITH AI AND DIGITAL TECHNOLOGIES** Frederick K.S. Leung (The University of Hong Kong)
	REIMAGINING MATHEMATICS EDUCATION THROUGH DIGITAL TRANSFORMATION JeongSuk Pang (Korea National University of Education)

Plenary Panel Discussion 2

The Evolution of Mathematics Education in East Asia

July 21, Monday

14:00~15:00	Moderator: Vilma Mesa (University of Michigan)
	MATHEMATICS EDUCATION IN SINGAPORE – AN INSIDER'S PERSPECTIVE Berinderjeet Kaur (Nanyang Technological University)
	KOREAN MATHEMATICS EDUCATION AT A CROSSROADS: **BALANCING TRADITION, INNOVATION, AND EQUITY** Oh Nam Kwon (Seoul National University)
	THE CHANGING LANDSCAPE OF MATHEMATICS EDUCATION IN THE PHILIPPINES: **REFLECTIONS ON THREE DECADES OF ACTIVE ENGAGEMENT IN ASIA AND BEYOND** Catherine Vistro-Yu (Ateneo de Manila University)
	PROGRESS IN MATHEMATICS EDUCATION IN JAPAN: **A 30-YEAR RETROSPECTIVE AND FUTURE OUTLOOK** Keiko Hino (Utsunomiya University)
	THE DEVELOPMENT OF MATHEMATICS EDUCATION IN HONG KONG: **LOOKING BACK AND LOOKING FORWARD** Ah Chee Ida Mok (The Chinese University of Hong Kong)

3. Invited Lectures

Invited Lectures 1	
July 19, Saturday	
Invited Lecture 1-1	
14:00~15:00	**RECENT DISCOURSE IN RESEARCH ON THE COMPETENCE OF MATHEMATICS TEACHERS** Moderator: Norbert Noster (University of Würzburg) Speaker: Gabriele Kaiser (University of Hamburg)
Invited Lecture 1-2	
14:00~15:00	**EAST ASIAN NARRATIVES OF MATHEMATICS IN AN ARTS-BASED RESEARCH PROJECT** Moderator: Ban Heng Choy (Nanyang Technological University) Speaker: Caroline Yoon (University of Auckland)
Invited Lecture 1-3	
14:00~15:00	**TRANSFORMING MATHEMATICS EDUCATION PRACTICES THROUGH INNOVATIVE PEDAGOGY AND DATA-DRIVEN PATHWAYS** Moderator: Maitree Inprasitha (Khon Kaen University) Speaker: Padmanabhan Seshaiyer (George Mason University)
Invited Lecture 1-4	
14:00~15:00	**TEACHING MATHEMATICS THROUGH APPLICATIONS: A CASE OF MATHEMATICS EDUCATION FOR NON-STEM UNDERGRADUATE STUDENTS** Moderator: Masataka Koyama (Hiroshima University) Speaker: Mitsuru Kawazoe (Osaka Metropolitan University)

Invited Lectures 2	
July 20, Sunday	
Invited Lecture 2-1	
14:00~15:00	**COMPUTATIONAL THINKING AS A CATALYST FOR CHANGE: REFLECTING ON WHAT, HOW, AND FOR WHOM WE TEACH MATHEMATICS IN THE DIGITAL AGE** Moderator: Igor' Kontorovich (The University of HongKong) Speaker: Oi-Lam Ng (The Chinese University of Hong Kong)
Invited Lecture 2-2	
14:00~15:00	**INTEGRATING AI AND DIGITAL TECHNOLOGIES IN STEM+I MATHEMATICS EDUCATION: OPPORTUNITIES AND CHALLENGES** Moderator: Jihwa Noh (Pusan National University) Speaker: Ho Kyoung Ko (Ajou University)

Invited Lecture 2-3	
14:00~15:00	**EMPOWERING STUDENTS AS MATHEMATICIANS THROUGH COMMUNITY-BASED MATHEMATICAL MODELING** Moderator: Hyunkyoung Yoon (California Polytechnic University, Pomona) Speaker: Jennifer Suh (George Mason University)
Invited Lecture 2-4	
14:00~15:00	**TEACHING MATHEMATICS THROUGH PROBLEM POSING: A SYSTEMATIC REVIEW OF PROBLEM-POSING-BASED LEARNING RESEARCH** Moderator: Yiming Cao (Beijing Normal University) Speaker: Jaepil Han & Jinfa Cai (University of Delaware)

Invited Lectures 3

July 22, Tuesday	
Invited Lecture 3-1	
09:00~10:00	**THE IMPACT OF SELF-REGULATED LEARNING ON MATHEMATICS PERFORMANCE: INSIGHTS FROM EAST ASIAN STUDENTS IN PISA 2022** Moderator: JeongSuk Pang (Korea National University of Education) Speaker: Zhu Yan (East China Normal University)
Invited Lecture 3-2	
09:00~10:00	**CREATING MATHEMATICS CLASSROOMS WHERE ALL STUDENTS CAN SUCCEED AND ENJOY LEARNING** Moderator: Jihwa Noh (Pusan National University) Speaker: Jinho Kim (Daegu National University of Education)
Invited Lecture 3-3	
09:00~10:00	**MATH IS FUN WITH BUNDLE-NUMBERS ON A BUNDLE-BUNDLE-BOARD** Moderator: Kyungwon Lee (Seoul National University) Speaker: Allan Tarp (MATHeCADEMY.net)

4. Topic Study Groups

Topic Study Groups 1

The Essence of Mathematics Education in Curriculum and Materials

Chair: Ji-Eun Lee (Oakland University)
Co-Chair: Rakhi Banerjee (Azim Premji University), Hui-Yu Hsu (National Tsing Hua University)
Corrdinator: Miin Lim (Seoul National University of Education)

July 19, Saturday	
10:30	**PRESERVICE TEACHERS' BELIEFS AND VIEWS ON CURRICULUM AND TEACHER GUIDE COMPONENTS** Ji-Eun Lee (Oakland University)
10:40	**DO DIGITAL CURRICULUM RESOURCES SUPPLEMENT THE EDUCATIVE FEATURES OF TEACHER GUIDEBOOKS?** MinYoung Oh (Graduate School of Korea National University of Education)
10:50	**A GUIDING FRAMEWORK FOR DESIGNING GRAPHING TASKS FOR STUDENT LEARNING** Hwa Young Lee (Texas State University)
11:00	**THE IMPACT OF TEACHING MATERIAL FORMATS ON TWO-STEP PROBLEM SOLVING: A COGNITIVE LOAD PERSPECTIVE** Yen-Ting Lai (National Changhua University of Education)
11:10	**EQUITY IN THE KOREAN ELEMENTARY MATHEMATICS CURRICULUM** MinKyung Kim (Graduate School of Korea National University of Education)
11:30	**A COMPARISON OF THE CATEGORIES OF NON TEXT ELEMENTS IN HIGH SCHOOL TEXTBOOKS - A CASE STUDY OF PEP A VERSION AND A-LEVEL VERSION** Xiaolin Yuan (East China Normal University)
11:40	**A COMPARATIVE STUDY OF DERIVATIVE CONTENT IN HIGH SCHOOL MATHEMATICS TEXTBOOKS** Chunxia Qi (Beijing Normal University)
11:50	**A COMPARATIVE STUDY ON THE PRAXEOLOGICAL ANALYSIS OF ELEMENTARY SCHOOL MATHEMATICS TEXTBOOKS IN KOREA AND FINLAND: FOCUSING ON SYMMETRY AND TRANSFORMATION** Jaehyeon Park (Seoul National University)
12:00	**DE/COLONIALITY IN MATHEMATICS CURRICULUMS OF THE PHILIPPINES AND INDIA** Harita Raval (Stockholm University)
12:10	**A STUDY OF PROOF TASKS IN SECONDARY SCHOOL MATHEMATICS TEXTBOOKS IN SINGAPORE** Weng Kin Ho (National Institute of Education)

July 20, Sunday	
10:30	**A STUDY ON EXPLORING THE CONTEXTUAL FEATURES OF QUESTIONS IN MATHEMATICS TEXTBOOK** Yi-An Cho (National Academy for Educational Research)
10:40	**ACTION RESEARCH OF IMPLEMENTING A PROBLEM-BASED LEARNING MODEL INTO THE CURRICULUM OF TEACHING MODELS FOR ELEMENTARY MATHEMATICS GIFTED STUDENTS** Yuan Yuan (National Taichung University of Education)

10:50	**FROM CLASSROOM TO REAL LIFE:** **EMBRACING MATHEMATICAL MODELLING IN HONG KONG'S CURRICULUM—INSIGHTS FROM SINGAPORE** Ka Shing Chui (The Education University of Hong Kong)
11:00	**EFFECTIVENESS OF THE TEACHING STRATEGY USING A CONFLICT MAP IN LESSONS ON MULTIPLICATION WITH DECIMAL FRACTIONS** Tadayuki Kishimoto (University of Toyama)
only proceedings	**MATHEMATICAL MODELING IN HONG KONG PRIMARY MATHEMATICS EDUCATION:** **A CONTENT ANALYSIS OF SCHOOL CURRICULUM** Hange Yun (The Education University of Hong Kong)
11:30	**AN ANALYSIS OF THE TYPES OF CONNECTIONS BETWEEN THE KOREAN MATHEMATICS COLLEGE SCHOLASTIC ABILITY TEST AND EBS-LINKED MATHEMATICS TEXTBOOKS** Minsik Woo (Seoul National University)
11:40	**A METHOD OF TEXTBOOK ANALYSIS FROM A PRAXEOLOGICAL PERSPECTIVE: THE CASE OF STATISTICS** Seitaro Hanasaki (Graduate School of Humanities and Social Sciences in Hiroshima University)
11:50	**PREALGEBRAIC CONCEPTS IN SOLVING NUMBER SENTENCES: A TEXTBOOK ANALYSIS** Maria Alva Aberin (Ateneo de Manila University)
12:00	**THE HIGHER-ORDER THINKING SKILLS (HOTS) CONTENT ANALYSIS ON MATHEMATICS TEXTBOOKS OF SENIOR HIGH SCHOOL** Haili Liang (Beijing Normal University)
12:10	**DEVELOPING AND VALIDATING IB-BASED MATHEMATICS ASSESSMENT TASKS:** **FOCUSING ON STUDENT THINKING AND RELIABILITY** Yoonjoo Cho (Seoul National University)

July 21, Monday	
10:30	**FROM COUNTABLE TO UNCOUNTABLE: DEVELOPING TEACHING MATERIALS FOR IRRATIONAL NUMBERS** Toshikazu Ikeda (Yokohama National University)
10:40	**INSIGHTS FROM GERMAN SECONDARY STATISTICAL EDUCATION ON THE DEVELOPMENT OF RISK LITERACY** Che-Yu Hsu (National Central University)
10:50	**CONTEXT IN STATISTICAL TASKS:** **INSIGHTS FROM LOWER SECONDARY MATHEMATICS TEXTBOOKS IN THAILAND** Dhanachat Anuniwat (Hiroshima University)
11:00	**EXPLORING DIGITAL LITERACY IN THE 2022 REVISED KOREAN MATHEMATICS CURRICULUM AND TEXTBOOKS** Jungeun Yoon (Seoul National University)
11:10	**A DECOLONIZED CURRICULUM AND CHILDREN'S BUNDLE-NUMBERS WITH UNITS MAY REACH THE UN DEVELOPMENT NUMERACY GOAL** Allan Tarp (MATHeCADEMY.net)
11:30	**GRADE 10 CALCULUS: WHY AND HOW** Wei-Chang Shann (National Central University)

11:40	**TRENDS AND PERSPECTIVE IN RESEARCH ON DIGITAL MATHEMATICS TEXTBOOKS: INSIGHTS FROM A SYSTEMATIC REVIEW** Hyosup Shim (Seoul National University)
11:50	**SOME LANGUAGE ISSUES IN DEFINING A NEW MATHEMATICAL CONCEPT: THE CASE OF JAPANESE SECONDARY SCHOOL STUDENTS** Shogo Murata (Nippon Sport Science University)
12:00	**DEVELOPMENT OF TEACHING MATERIALS ON THE LOCUS OF THE CIRCUMCENTER OF A REGULAR POLYGON** Yuki Osawa (Kaichi Mirai Junior and Senior High School)
12:10	**GEOMETRIC CONSTRUCTION IN TAIWANESE AND JAPANESE JUNIOR HIGH SCHOOL TEXTBOOKS** Yi-Wen Su (University of Taipei)

Topic Study Groups 2

The Essence of Mathematics Education in Classroom Practice

Chair: Hino Keiko (Utsunomiya University)
Co-Chair: Leong Yew Hoong (National Institute of Education), Kotaro Komatsu (University of Tsukuba)
Corrdinator: Jin Sunwoo (Gwangju National University of Education)

Topic Study Groups 2-1	
July 19, Saturday	
10:30	**TEACHING AND LEARNING OF SOLID GEOMETRY IN PRIMARY EDUCATION IN NICARAGUA: A DIDACTIC PROPOSAL BASED ON THE IMPLEMENTATION OF THE VAN HIELE MODEL AND THE PROBLEM-SOLVING APPROACH** Douglas Jared Martínez Cruz (Naruto University of Education)
10:50	**FOURTH-GRADE STUDENTS' JUSTIFICATIONS OF THE PROPERTIES OF EVEN AND ODD NUMBERS** Hae Song Oh (Graduate School of Korea National University of Education)
11:10	**A STUDY ON MANIPULATIVE ACTIVITIES FOR THE UNDERSTANDING SUBSUMPTION RELATIONS AMONG OF FIGURES : THROUGH CLASSES ON QUADRILATERALS FOR SIXTH-GRADE ELEMENTARY SCHOOL STUDENTS** Daisuke Itagaki (Graduate Student at the Graduate School of Education, Shimane University)
11:30	**USING TEACHING WITH VARIATION IN AFRICAN MATHS CLASSROOMS: A PARTICIPATORY CASE STUDY** Xumai Lin (University of Macau)
11:50	**HOW TEACHERS' INSTRUCTION INFLUENCES STUDENTS' UNDERSTANDING IN THE AREA OF A CIRCLE** Yi-Lun Tsai (National Pingtung University)
12:10	**IMPACT OF LESSONS EMPHASIZING A RELATIONAL UNDERSTANDING OF THE EQUAL SIGN: FOCUSED ON SAMENESS AND SUBSTITUTION MEANINGS** Juhyeon Kim (Graduate School of Korea National University of Education)

July 20, Sunday	
10:30	**TEACHING WHOLE-NUMBER MULTIPLICATION, COMBINING CHILDREN'S LEARNING TRAJECTORY OF PROPORTIONAL REASONING: A CLASSROOM-BASED STUDY** Hino Keiko (Utsunomiya University)
10:50	**AN ANALYSIS OF STUDENT' FOCUS ON THE RELATIONSHIP BETWEEN ORIGINAL SIZE AND FRACTIONS: A CASE STUDY OF 2ND GRADE LESSONS ON "FRACTION"** Yuri Masutani (Shimane University)
11:10	**THE USE OF MATHEMATICAL AND NATURAL LANGUAGE BY ELEMENTARY SCHOOL TEACHERS IN DIVISION LESSONS** Yun Hsia Pai (National Tsing Hua University)
11:30	**CURRICULUM ALIGHMENT THROUGH MULTILITERACY IN MATHEMATICS EDUCATION: INSIGHTS FROM FINLAND** Eunji Kim (Tampere University)
11:50	**ENHANCING MATHEMATICAL CREATIVITY USING THE CONCEPTS OF INCUBATION BREAK AND THE FIVE LEGS OF CREATIVITY** Rhett Anthony C. Latonio (Ateneo de Manila University)
12:10	**MANAGING THE TRANSITIONS IN CONCRETE-PICTORIAL-ABSTRACT** Yew Hoong Leong (National Institute of Education, Nanyang Technological University)

July 21, Monday	
10:30	**ANALYSIS OF TYPES OF DEALING WITH THE CONTEXT OF TASK IN SIXTH GRADE STUDENTS' MATHEMATICAL MODELING** Nahee Kim (Seoul National University of Education)
10:50	**DESIGNING MODELLING TASKS TO ENHANCE STATISTICAL THINKING: INTEGRATING STUDENTS' EXPERIENCES OF HITTING THE LITTLE TOE WITH SCIENTIFIC PROBLEMS** Daiki Fujiwara (Naruto University of Education)
11:10	**A PROBABILITY MODELING APPROACH TO PROMOTE STUDENTS' CONNECTIONS ACROSS THREE PERSPECTIVES OF PROBABILITY** Minh Kiem Tran (Hue University of Education)
11:30	**MATHEMATICS CLASSROOM MANAGEMENT IN EL SALVADOR ELEMENTARY SCHOOLS AND ITS RELATIONSHIP WITH STUDENTS' ATTITUDE AND ACADEMIC PERFORMANCE** Félix Abraham Guevara (Naruto University of Education)

Topic Study Groups 2-2	
July 19, Saturday	
10:30	**EXPLORING THE POTENTIAL OF CHATGPT IN MATHEMATICS EDUCATION: A STUDY ON EXPLANATIONS ON SUPERSCRIPT (-1) IN PEDAGOGY AND MATHEMATICS** Xiaoying Chen (China West Normal University)
10:50	**NARRATIVES OF A HIGH SCHOOL TEACHER IN A MATHEMATICS CLASS** Mayumi Kawamura (Oita University)

11:10	**EXPLORING THE CURRENT STATE OF GIFTED EDUCATION IN MATHEMATICS IN JAPAN: A CASE STUDY OF CLASSROOM PRACTICES IN A SUPER SCIENCE HIGH SCHOOL** Natsuki Uchikubo (University of Tsukuba)
11:30	**PROPOSAL FOR WIDE-AREA DEVELOPMENT AND CLASSROOM PRACTICE USING ICT TEACHING MATERIALS THAT CAN BE CONSIDERED FROM DAILY LIFE** Satoru Sakanashi (Tokyo Metropolitan Minato Municipal Odaiba-Gakuen Koyo Junior High School)
11:50	**EMBRACING STUDENTS' DIVERSITY IN MATHEMATICS THROUGH DIFFERENTITATED INSTRUCTION AND OPEN APPROACH: A FRAMEWORK DEVELOPMENT** Yoga Dwi Windy Kusuma Ningtyas (Hiroshima University)

July 20, Sunday	
10:30	**GRADE 10 STUDENTS CONCEPTIONS OF PROOF - AN EXPLORATORY STUDY** Berinderjeet Kaur (National Institute of Education)
10:50	**THE IMPACT OF PROBLEM POSING ON STUDENT'S MATHEMATICAL INQUIRY SKILLS : AN EMPIRICAL INVESTIGATION** Jung Sook Park (Jungwha High School)
11:10	**PROBLEM-POSING PRACTICES: A CASE STUDY OF A FILIPINO SCIENCE HIGH SCHOOL MATHEMATICS TEACHER** Lester Hao (Ateneo de Manila University)
11:30	**THE ROLE OF REFLECTION CARD IN FACILITATING APPROPRIATION PROCESSES IN MATHEMATICS EDUCATION** Shinya Nakao (Kansai University of Welfare Sciences)
11:50	**USING STUDENT'S SELF-ASSESSMENT OF THEIR INTERPRETED PREPARATION FOR CLASS: A PILOT OF USING THE MASTU EVALUATION** Amanda Jo Meiners (Northwest Missouri State University)

July 21, Monday	
10:30	**RESULTS OF TEACHER QUESTION ANALYSIS IN A MATHEMATICS RESEARCH LESSON** Ganbaatar Tumurbaatar (Mongolian National University of Education)
10:50	**TEACHERS INTERPRETING STUDENT WORK IN GEOMETRY: USING CURRICULAR TEXT TO SUPPORT INSTRUCTIONAL EXCHANGE** Soobin Jeon (University of Michigan)
11:10	**A STUDY ON ASPECTS OF GRASPING QUANTITATIVE RELATIONS IN WORD PROBLEMS INVOLVING INVERSE CALCULATION : FOCUSING ON THE PROCESS OF DRAWING THE DIAGRAMS** Maoko Nakahata (Shimane University)
11:30	**STREAMING IN SECONDARY MATHEMATICS: A VIEW FROM AUSTRALIA** Elena Prieto-Rodriguez (University of Newcastle)

Topic Study Groups 3

The Essence of Mathematics Education in Assessment and Evaluation

Chair: Xinrong Yang (University of Macau)
Co-Chair: Zhenzhen Miao (Jiangxi Normal University), Younggon Bae (University of Texas Rio Grande Valley)
Corrdinator: SungHwan Hwang (Chuncheon National University of Education)

July 19, Saturday	
10:30	**THE RELATIONSHIP BETWEEN MIDDLE SCHOOL STUDENTS' MATHEMATICS SELF-EFFICACY, MATHEMATICS ANXIETY, AND MATHEMATICAL LITERACY** Yi-Jhen Li (National University of Tainan)
10:50	**AN EXPLORATORY STUDY OF MIDDLE SCHOOL STUDENTS' PERFORMANCE AND TYPICAL ERRORS IN MODELING TASKS** Qianhui Zhao (East China Normal University)
11:10	**EXAMINING MASTERY OF COGNITIVE ATTRIBUTES IN MATHEMATICS USING SOUTH KOREAN NATIONAL ASSESSMENT OF EDUCATIONAL ACHIEVEMENT DATA** Jihyun Hwang (Korea National University of Education)
11:30	**FROM ICT USE TO CREATIVE THINKING: THE MEDIATION OF ATTITUDES TOWARDS CREATIVE THINKING AMONG EAST ASIAN STUDENTS** Si Chen (Beijing Normal University)
11:50	**FACTORS PREDICTING EAST ASIAN STUDENTS' PERCEIVED QUALITY OF MATHEMATICS INSTRUCTION: A MACHINE LEARNING APPROACH** Xu Wei (Beijing Normal University)
12:10	**CREATIVITY IN MATH ASSESSMENTS** Yujin Lee (Kangwon National University)

July 20, Sunday	
10:30	**A VALIDATION STUDY MEASURING INTERDISCIPLINARY MATHEMATICAL PROBLEM SOLVING ABILITY** Zhongtian Ji (Beijing Normal University)
10:50	**THE EFFECTS OF TECHNOLOGICAL INNOVATION IN NATIONAL MATHEMATICS ASSESSMENT** Chang-Geun Song (Cheongju National University of Education)
11:10	**STUDENTS' SELF-REFLECTION IN A GEOMETRY LESSON: PERSPECTIVES AND QUALITY** Satoshi Kusaka (Naruto University of Education)
11:30	**COMMUNICATION SKILLS PERFORMANCE IN QUANTITATIVE RELATED LITERACY AMONG ELEMENTARY SCHOOL STUDENTS** Yun-Chi Tsou (Southern Illinois University Carbondale)
11:50	**IN BUNDLENUMBER-MATH YOU JUST ASK THE BUNDLEBUNDLE BOARD** Allan Tarp (MATHeCADEMY.net)

10:30	**A STUDY ON PERSPECTIVES FOR EVALUATING VISUAL REPRESENTATIONS IN MATHEMATICS LESSONS** Naoya Miwa (University of Tsukuba)
10:50	**THE ROLE OF ORIGINAL PROBLEMS IN MATHEMATICAL PROBLEM POSING ASSESSMENTS** Ziyi Jin (Hiroshima University)
11:10	**SCAFFOLDED INTERVIEW TASKS BUILD ON WRITTEN TASKS TO REVEAL ALGEBRAIC THINKING** Catherine Pearn (The University of Melbourne)
11:30	**ENHANCING ADAPTIVE MATHEMATICS ASSESSMENT THROUGH GENERATIVE AI: INTEGRATING THE COGNITIVE DISTRACTOR GENERATION MODEL (CDGM) INTO THE GENERATIVE AI-BASED MULTI-STAGE ASSESSMENT (GAMSA) FRAMEWORK** Jin Min Chung (University of Iowa)

Topic Study Groups 4

The Essence of Mathematics Teacher Education

Chair: Takeshi Miyakawa (Waseda University)
Co-Chair: Maitree Inprasitha (Khon Kaen University), Qiaoping Zhang (The Education University of Hong Kong)
Corrdinator: Soo Jin Lee (Korea National University of Education)

Topic Study Groups 4-1

July 19, Saturday

10:30	**EXPLORING LESSON STUDY TEAM COLLABORATION IN TEACHING POSITIVE AND NEGATIVE NUMBERS TO GRADE 7 STUDENTS** Noppasorn Boonsena (Khon Kaen University)
10:45	**COMPARISON OF LESSON PLANNING PROCESSES BY PRE-SERVICE MATHEMATICS TEACHERS: FROM THE PERSPECTIVE OF DESIGN RESEARCH** Hayato Hanazono (Miyagi University of Education)
11:00	**COLLABORATIVE RESEARCH LEARNING: COMMUNITIES OF PRACTICE AMONG PRE-SERVICE AND IN-SERVICE MATHEMATICS TEACHERS** Mailizar Mailizar (Syiah Kuala University)
11:30	**TRANSFORMING LESSON REFLECTION MEETING USING 'LEARNER OBSERVATION SHEET'** Naoki Yachimoto (Hokkaido University of Education)
11:45	**SUSTAINING LESSON STUDY AS A PROFESSIONAL DEVELOPMENT MODEL: FROM THE TEACHERS' PERSPECTIVE** Edna Callanta (University of the Philippines National Institute for Science and Mathematics Education Development)
12:00	**TEACHERS' EXPERIENCE OF REFLECTIVE PRACTICE IN THE OPEN CLASS** Narumon Changsri (Khon Kaen University)

July 20, Sunday	
10:30	**AN ANALYSIS OF MATHEMATICS TEACHER'S SUPPORT IN HIGH SCHOOLERS' INQUIRY: FOCUSING ON THE MOMENT OF SUPERVISIONS IN SRP** Toshihiko Ogawa (Waseda University)
10:45	**TOWARDS REFASHIONING TEACHERS' TASK DESIGN IN TRIGONOMETRY: A PROFESSIONAL DEVELOPMENT MODEL** Jake Garnace (Ateneo de Manila University and University of Northern Philippines)
11:00	**REFLECTING IN-SERVICE ELEMENTARY TEACHERS' MATHEMATICAL KNOWLEDGE FROM TEACHER PROFESSIONAL EDUCATION PROGRAM** Zetra Hainul Putra (Universitas Riau)
11:15	**THE DEVELOPMENT OF DIDACTIC PRAXEOLOGIES IN LESSON DESIGN THROUGH SOCIAL RESOURCE INTERACTIONS: EVIDENCE FROM TWO NOVICE MATHEMATICS TEACHERS** Xingfeng Huang (Shnaghai Normal University)
11:40	**A STUDY ON INSTRUCTIONAL REPRESENTATIONS IN DIFFERENT TEACHING SCENARIOS: INTRODUCING TEXT MINING TECHNIQUES** Ling-Yi Huang (National Taipei University of Education)
11:55	**THE ROLE OF PROFESSIONAL DEVELOPMENT IN ENHANCING MATHEMATICAL CREATIVITY: A CASE STUDY OF NOVICE TEACHERS** Yujin Lee (Kangwon National University)
12:10	**INTERVENTIONS TO DEVELOP PRE-SERVICE MATHEMATICS TEACHERS' COMPETENCE IN DIFFERENTIATED INSTRUCTION: A SCOPING REVIEW** Iden Rainal Ihsan (National Taiwan Normal University)

July 21, Monday	
10:30	**TEACHERS' INTENTION TO IMPLEMENT BLENDED LEARNING IN ALGEBRA: INSIGHTS FROM A PILOT STUDY** Nursaadah Jailani (The National University of Malaysia)
10:45	**INNOVATION IN MATHEMATICS TEACHER EDUCATION THROUGH A STEAM-BASED GLOBAL PROFESSIONAL LEARNING COMMUNITY MODEL** Jungin Heo (Samjung High school)
11:00	**DEVELOPMENT OF A TEACHER TRAINING MODEL FOR ENHANCING AI DIGITAL TEXTBOOK UTILIZATION COMPETENCY** Seo Hyun Ahn (University of Ajou)
11:30	**"AM I BEING TOO UNHELPFUL?" MATHEMATICS TEACHER DECISION-MAKING & RESPONSIBILITY** Samantha A. Marshall (North Carolina State University)
11:45	**ANALYZING STUDENT REFLECTIONS IN TEACHING PRACTICUM TO ENHANCE MATHEMATICS INSTRUCTION COURSES** Hideyo Makishita (Yamato University)
12:00	**INVESTIGATING BEST PRACTICES OF HIGH SCHOOL MATH TEACHERS** Hyunkyoung Yoon (California Polytechnic University, Pomona)

Topic Study Groups 4-2	
July 19, Saturday	
10:30	**INVESTIGATING PRESERVICE TEACHERS' CURRICULAR NOTICING ABILITY THROUGH TEXTBOOK ANNOTATION ACTIVITIES** Chunxia Qi (Beijing Normal University)
10:45	**MATHEMATICS TEACHERS' TEXTBOOK UNDERSTANDING: A MEDIATION EFFECT ANALYSIS** Qinqiong Zhang (Fujian Normal University)
11:15	**SUPPORTING EARLY CAREER TEACHERS' NOTICING: A FACILITATOR'S INTENT IN LESSON STUDY** Hyomin Kang (University of Tsukuba)
11:30	**VISUAL PERCEPTION OF EXPERT AND NOVICE MATHEMATICS TEACHERS ACROSS STUDENT PROFILES** Rangmei Li (Beijing Normal University)
11:45	**EXAMINING ADAPTIVE EXPERTISE OF EMERGING AND EXPERIENCED INSTRUCTIONAL COACHES THROUGH NOTICING** Sze Looi Chin (Massey University)
July 20, Sunday	
10:30	**NAVIGATING STATISTICS AND PROBABILITY INSTRUCTION THROUGH MKT: A CONTENT ANALYSIS OF TEACHER REFLECTIONS** Joseph Ma. Steven Cabalo (Ateneo de Manila University)
10:45	**MANIFESTATIONS OF TEACHER AGENCY IN MATHEMATICS EDUCATION: PERSONAL, SOCIAL, AND CONTEXTUAL INSIGHTS FROM A GRADUATE COURSE ON TEACHING STATISTICS AND PROBABILITY** Nhoriel Toledo (Centro Escolar University, Ateneo de Manila University)
11:00	**LESSON PLANNING AS A REFLECTION OF PRE-SERVICE MATHEMATICS TEACHERS' MODELING TEACHING COMPETENCE** An Thi Tan Nguyen (Hue University)
11:30	**PERCEPTIONS AND PRACTICES OF FILIPINO JUNIOR HIGH SCHOOL MATHEMATICS TEACHERS ON PROBLEM-POSING** John Patrick Cultura (La Salle College Antipolo)
11:45	**TAIWANESE SECONDARY MATHEMATICS TEACHERS' PERSPECTIVES ON CALCULUS INSTRUCTION: INSIGHTS FROM THE CURRICULAR AND CONTEXTUAL FACTORS** Pin-Chen Guo (National Taiwan Normal University)
12:00	**CONCEPTIONS OF MATH TEACHING AND LEARNING IN CONVERSATIONS ABOUT CURRICULAR CHANGE** Nurdan Turan (New York University)
July 21, Monday	
10:30	**EVALUATION OF STUDENTS' COUNTEREXAMPLES BY PRE-SERVICE PRIMARY SCHOOL TEACHERS** Kayo Miura (Hiroshima University)
10:45	**SHORT-DURATION OBSERVATION INSTRUMENT FOR ELEMENTARY MATHEMATICS TEACHERS' COMPETENCE (SDOI-EMTC)** Ting-Chun Kuo (National Taipei University of Education)

11:00	**KNOWLEDGE NEEDED FOR TEACHING MATHEMATICS TO STUDENTS WITH LEARNING DISABILITIES** Roslinda Rosli (The National University of Malaysia)
11:15	**PRESERVICE MATHEMATICS TEACHERS' EMERGING PEDAGOGICAL CONTENT KNOWLEDGE IN A LESSON STUDY-MEDIATED PRACTICE TEACHING** Monalisa Sasing (University of the Philippines National Institute for Science and Mathematics Education Development)
11:40	**EXPLORING THE DEVELOPMENT OF PRIMARY MATHEMATICS PRE-SERVICE TEACHERS' TEACHING SELF-EFFICACY: A PRELIMINARY ANALYSIS** Hui Min Chia (University of Macau)
11:55	**A TEACHER'S DEVELOPMENT OF STUDENTS' METACOGNITION IN A MATHEMATICS CLASSROOM** Leng Low (Academy of Singapore Teachers, Ministry of Education)
12:10	**SHIFT IN TEACHER'S PERSPECTIVES IN MATHEMATICS BASED ON INTERVENTIONS ON INDIAN KNOWLEDGE SYSTEMS AND DISTINCTIONS BETWEEN EMPIRICAL AND FORMAL MATHEMATICS** Sanjeev Ranganathan (C3STREAM Land, SAIIER)

Topic Study Groups 5

The Essence of Mathematics Education in Learning and Cognition

Chair: Ban Heng Choy (Nanyang Technological University)
Co-Chair: Yuriko Yamamoto Baldin (Universidade Federal de São Carlos), Insook Chung (Saint Mary's College, Notre Dame)
Corrdinator: Jiyoung Lee (Gongju National University of Education)

July 19, Saturday	
10:30	**ANALYSIS OF THIRD-GRADE STUDENTS' STRATAGIES FOR SOLVING MULTI-DIGIT MULTIPLICATION PROBLEMS** Johyeon Chang (Korea National University of Education)
10:40	**INVESTIGATING THIRD GRADERS' PLACE VALUE CONCEPT AND MULTI-DIGIT ADDITION THINKING STRATEGIES** Hannah Mortensen (Saint Mary's College)
10:50	**TEACHERS SEE 1 NUMBER WHERE KIDS SEE 3 NUMBERINGS IN 507, WHO IS NUMBER-BLIND?** Allan Tarp (MATHeCADEMY.net)
11:00	**CHARACTERISTICS OF MATHEMATICAL NEGOTIATION THAT PROMOTE FRACTION CONCEPT FORMATION : AN ANALYSIS OF CLASS UTILIZING THE NUMBER LINE** Taketo Shimomura (Shimane University)
11:10	**"DIVIDING THE DENOMINATORS AND NUMERATORS SEPARATELY": SIXTH GRADERS' STRATEGIES OF THE MEASUREMENT FRACTION DIVISION** Jeongwon Kim (Bongmyeong Elementary School)
11:20	**HOW JAPANESE CHILDREN FOCUSING ON SPONTANEOUS PATTERNS CREATE PATTERNS?** Nanae Matsuo (Chiba University)
11:30	**A VISUALIZATION OF THE STRUCTURE OF KNOWLEDGE BASED ON THE CONNECTIONS OF MATHEMATICAL CONCEPTS** Ye-Jin Lee (Seoul National University of Education)

11:40	**CRITICAL THINKING IN MATHEMATICS EDUCATION: A SYSTEMATIC REVIEW** Ersi Cha (East China Normal University)
11:50	**IS THERE A CONNECTION BETWEEN REASONING OF MATHEMATICS AND SCIENCE: A DOCUMENT ANALYSIS OF TIMSS ASSESSMENT FRAMEWORK** Jin Mun (Seoul National University)
12:00	**CONTEXT-BASED LEARNING FOR ELEMENTARY STUDENTS: CONSTRUCTING REPRESENTATIVENESS IN ARITHMETIC MEAN USING AIC THEORY** Youngin Kim (Seoul National University Graduate School)

July 20, Sunday	
10:40	**A STUDY ON SPATIAL SKILLS TO ENHANCE MENTAL OPERATIONS IN ELEMENTARY SCHOOL STUDENTS** Satoshi Watanabe (Jissen Women's University)
10:50	**EARLY SPATIAL REASONING: THE CASE OF PATH FINDING AND CONSTRUCTION** Kazuya Kageyama (Hiroshima University)
11:00	**A DESIGN-BASED STUDY ON INTEGRATING CREATIVE AND CRITICAL THINKING INTO MATHEMATICS-GROUNDING ACTIVITIES: PROPORTIONAL REASONING** Bo-Ting Liu (National Taiwan Normal University)
11:10	**SURVEY ON THE FORMATION OF THE CONCEPT OF SPEED** Masahide Tsuda (Soka University)
11:20	**EXPLORING THE ABSTRACTION PROCESS DURING ALGEBRA PROBLEM-SOLVING IN A PROGRAMMING-ENHANCED ENVIRONMENT** Haoyi Wang (University of Pennsylvania)
11:30	**STRUCTURE SENSE AND FLEXIBILITY IN ALGEBRAIC PROBLEM-SOLVING: AN EXPLORATORY STUDY** Haoyi Wang (University of Pennsylvania)
11:40	**A COMPARATIVE STUDY OF INVERSE FUNCTIONS AMONG KOREAN AND CHINESE HIGH SCHOOL STUDENTS** Wenting Liu (Kaili University)
11:50	**GRADUATE STUDENTS IN EDUCATION' UNDERSTANDING OF ALGORITHMIC THINKING IN MATHEMATICS CLASSROOM THROUGH A COLORING BOOK WORKSHOP** Wiramon Kanlayarat (Khon Kaen University)
12:00	**EXAMINATION OF MATHEMATICAL DISCOURSE FOR INDIRECT PROOF OF THE CONVERSE OF THE INSCRIBED ANGLE THEOREM** Keiko Watanabe (Shiga university)
12:10	**ENGAGING THROUGH REASONING: A CULTURAL-HISTORICAL ACTIVITY THEORY (CHAT) ANALYSIS OF STUDENTS' ENGAGEMENT IN ACCOUNTABLE TALK IN A HYFLEX MATHEMATICS CLASSROOM** Edrian Peter Villanueva (De La Salle Univerisity)

July 21, Monday	
10:30	**THE COHERENT AND STRATEGIC USES OF PIAGET'S NOTION OF PERTURBATION IN MATHEMATICS (TEACHER) EDUCATION** Biyao Liang (The University of Hong Kong)
10:40	**USING ACE TEACHING CYCLE IN DEVELOPING A PRELIMINARY GENETIC DECOMPOSITION: A PROPOSED FRAMEWORK** Christian Abasta (Ateneo de Manila University)
10:50	**THE EFFECTS OF DIFFERENT INSTRUCTIONAL REPRESENTATIONS ON THE STUDENT ENGAGEMENT IN ELEMENTARY MATHEMATICS REMEDIAL TEACHING** Lan-Hsin Zhang (National Taipei University of Education)
11:00	**THE TEACHER AS A MEDIATOR IN A PROPORTIONAL REASONING TASK** Elaine Yu Ling Cai (Nanyang Technological University)
11:10	**ANALYZING INTERDEPENDENCY OF COGNITIVE ATTRIBUTES IN MATHEMATICS AND SCIENCE** Jihyun Hwang (Korea National University of Education)
11:20	**CHILDREN'S MATHEMATICAL NOTICING IN AN ONLINE PEER-GENERATED STRATEGY VIDEO** Ho-Chieh Lin (Qing Shui Elementary School)
11:30	**READING COMPREHENSION OF REAL-WORLD PROBLEMS: AN ERP STUDY** Hui-Yu Hsu (National Tsing Hua University)
11:40	**PHONE FREQUENCY DISTRIBUTIONS IN MATHEMATICAL LANGUAGE: A STATISTICAL ANALYSIS OF MANDARIN** Pu Yu (National Chengchi University)
11:50	**A NEUROCOGNITIVE PERSPECTIVE ON THE DEVELOPMENT OF FRACTIONAL UNDERSTANDING BASED ON APOS THEORY** Doyeon Ahn (Korea National University of Education)
12:00	**FALLACY OF COMPOSITION AND COIN TOSS SEQUENCES: COMPARING SEQUENCES WITH THE SAME HEADS-TO-TAILS RATIOS** Ippo Ishibashi (Okayama University)

Topic Study Groups 6

The Essence of Mathematics Education in the Use of Digital Technology

Chair: Mi Yeon Lee (Arizona State University)
Co-Chair: Oi-Lam Ng (The Chinese University of Hong Kong), Sheunghyun Yeo (Daegu National University of Education)
Corrdinator: Dongjo Shin (Pusan National University)

Topic Study Groups 6-1 AI Integration in Mathematics Education	
July 19, Saturday	
11:00	**LEARNING TEACHING MATHEMATICS WITH INSTRUCTIONAL TECHNOLOGY: A PRAXEOLOGICAL ANALYSIS OF A GHANAIAN MATHEMATICS TEACHER EDUCATION COURSE** Farouq Sessah Mensah (Stockholm University)

11:12	**EXPLORING PRESERVICE TEACHERS' INTEGRATION OF AI TOOL THROUGH AI-TPACK AND SAMR MODEL** Yujin Lee (Heungryong Elementary School)
11:24	**PRE-SERVICE TEACHERS' SELF-EFFICACY OF USING GENERATIVE ARTIFICIAL INTELLIGENCE IN MATHEMATICS INSTRUCTION** Norbert Noster (University of Würzburg)
11:36	**STUDENTS' PERCEPTIONS OF GENERATIVE ARTIFICIAL INTELLIGENCE AND UNDERSTANDING OF MATHEMATICAL PROOFS** Yujin Lee (Kangwon National University)
11:48	**SIMULATED PRACTICE-BASED TEACHING FOR PRESERVICE TEACHERS USING AN AI CHATBOT** Taekwon Son (Bongmyong Elementary School)
12:00	**HOW SECONDARY MATHEMATICS TEACHERS LEVERAGE AI-POWERED TOOLS TO ENHANCE TEACHING EFFICIENCY** Wing Kin Cheng (Hong Kong Metropolitan University)

July 20, Sunday	
10:30	**CRITICAL REFLECTIONS ON ALGORITHMIC LEARNING DESIGN AND HUMAN EXISTENCE THROUGH HEIDEGGERIAN ONTOLOGY** Jiyoung Kim (Seoul Dungyang Elementary School)
10:40	**EXPLORING THE LONG-TERM LEGACY OF COVID DISRUPTION TO MATHEMATICS TEACHING IN AUSTRALIAN PRIMARY SCHOOLS** Kathryn Holmes (Western Sydney University)
10:50	**KOREAN TEACHERS' PERCEPTION ON AI-EMPOWERED DIGITAL TEXTBOOKS IN MATHEMATICS** Jukyung Park (Seoul Oryun Elementary School)
11:00	**HARNESSING AI IN SINGAPORE PRIMARY MATHEMATICS CLASSROOM - REDEFINING THE ROLE OF A TEACHER** Suo Hui Chang (Academy of Singapore Teachers)
11:10	**ANALYSIS OF THE STRUCTURING FEATURES OF CLASSROOM PRACTICE IN A TRIGONOMETRIC RATIOS LESSON FOR ACUTE ANGLES USING GENERATIVE AI** Jaeeun Joo (Mudung Middle school)
11:20	**EXPLORING ACTOR-NETWORKS IN MATHEMATICS CLASSES USING GENERATIVE AI** Jungeun Yoon (Seoul National University)
11:30	**UTILIZATION OF CHEATING-RESISTANT QUESTIONS USING STACK IN THE COURSE OF LINEAR ALGEBRA** Kentaro Yoshitomi (Osaka Metropolitan University)
11:40	**STUDENT INTERACTIONS WITH CHATGPT: ANALYZING PROBLEM-POSING PROCESSES IN A NUMBER THEORY COURSE** Ah Ra Cho (Seoul National University)
11:50	**THE DEVELOPMENT OF PRESERVICE MATHEMATICS TEACHERS' SPATIAL REASONING: STRENGTHS AND CHALLENGES** Lizhen Chen (Western Washington University)

12:00	**DESIGNING AND REVISING DYNAMIC GEOMETRY TASKS BY PRE-SERVICE ELEMENTARY TEACHERS: THEORETICAL NETWORKING OF NOTICING AND TPACK** Nayoung Ku (Gyeonggi Science High School)

July 21, Monday	
10:30	**TOWARDS A DIGITAL MATHEMATICS TEACHING ANALYTIC FRAMEWORK** Erlina Ronda (University of the Philippines)
10:40	**ELECTRONIC FEEDBACK IN FORMATIVE ASSESSMENT: ENHANCING STUDENT UNDERSTANDING IN MATHEMATICS** Huan Chin (Universiti Sains Malaysia)
10:50	**PERCEIVED IMPACT OF AI-GENERATED FEEDBACK ON UNDERGRADUATE MATHEMATICS LEARNING IN GEOMETRIC PROOF** Lady Angela Rocena (University of the Philippines Integrated School)
11:00	**ANALYSIS OF MATHEMATICAL PERFORMANCE AND REASONING PROCESS OF GENERATIVE AI: FOCUSING ON THE COLLEGE SCHOLASTIC ABILITY TEST** Sejun Oh (Hongik University)
11:10	**SHIFT OF OUTPUT RESULTS WHEN INPUT TO THE GENERATIVE AI ARE CHANGED : A CASE STUDY OF THE 2024 NATIONAL STUDENT ACHIVEMENT SURVEY FOR GRADE 9** Ruka Kikuchi (Saitama university)
11:20	**CHATGPT AS PROBLEM POSER: CONTEXTUALIZED AI-ASSISTED PROBLEM GENERATION USING STRUCTURED CHAIN-OF-THOUGHT PROMPTING** Joseph Ma. Steven Cabalo (Ateneo de Manila University)
11:30	**POCKET CALCULATORS IN GRADE ONE TO PREDICT DIVISION TABLES** Allan Tarp (MATHeCADEMY.net)
11:40	**AN ANALYSIS OF MATHEMATICAL CAPABILITIES OF GENERATIVE ARTIFICIAL INTELLIGENCE: FOCUSING ON CHATGPT O4-MINI-HIGH, COPILOT, GEMINI 2.5 PRO, AND DEEPSEEK R1** Hong Kyung Yun (Seoul National University)
11:50	**NOTICING CLASSES OF PRESERVICE TEACHERS: RELATIONS TO TEACHING MOVES THROUGH AI CHATBOT SIMULATION** Taekwon Son (Bongmyeong Elementary School)
12:00	**EXPLORING PRESERVICE TEACHERS' UNDERSTANDING OF FRACTION MULTIPLICATION WITH A TECHNOLOGICAL TOOL** Ji Nam Hwang (Yongjeong Elementary School)

Topic Study Groups 6-2 **Theoretical and Practical Exploration with Digital Tools in Mathematics Education**	
July 19, Saturday	
11:00	**EQT-TECH: FRAMEWORK FOR INTEGRATING TECHNOLOGY TO ADVANCE MATH THINKING AND LEARNING** Jennifer Suh (George Mason University)

11:12	**EVOLVING TRENDS IN MATHEMATICS EDUCATION RESEARCH ON DIGITAL TECHNOLOGY: A DYNAMIC TOPIC MODELING ANALYSIS** Yeongjun Kim (Seoul National University)
11:24	**INVESTIGATING PRESERVICE TEACHERS' USE OF A DYNAMIC DIGITAL TOOL TO SOLVE A FRACTION MULTIPLICATION PROBLEM** Mi Yeon Lee (Arizona State University)
11:36	**USE OF GEOGEBRA IN ADDITION AND SUBTRACTION OF FRACTIONS WITH DIFFERENT DENOMINATORS IN MOZAMBIQUE** Fernando Macuacua Junior (Naruto University of Education)
11:48	**'GREEDY PIG' FOR A MATHEMATICAL INQUIRY WITH PROGRAMMING IN SECONDARY SCHOOL** Dai Kishimoto (Waseda university)
12:00	**STUDENTS' REASONING OF QUADRATIC GROWTH IN A PROGRAMMING-BASED ENVIRONMENT** Xuan Su (The University of Hong Kong)
12:12	**ENHANCING COMPUTATIONAL THINKING THROUGH MACHINE LEARNING IN DAILY WASTE SORTING PROBLEM SITUATIONS** Anucha Koyata (Khon Kaen University)

July 20, Sunday	
10:30	**META-ANALYSIS OF THE EFFECTS OF EDUCATIONAL ROBOTICS ON K-12 STUDENTS' MATHEMATICS LEARNING** Ziyi Xiao (East China Normal University)
10:40	**EXPLORING MATHEMATICAL NARRATIVES AND CITIZENS' COMMUNICATION IN KOREAN YOUTUBE SHORTS** Kyungwon Lee (Seoul National University)
10:50	**DESIGNING AUGMENTED PAPER-BASED MATHEMATICS LEARNING ENVIRONMENT FROM AN EMBODIED COGNITION PERSPECTIVE: APPLICATION TO THE TRANSLATION OF QUADRATIC FUNCTIONS** Hyowon Wang (Sookmyung Women's University)
11:00	**COLLABORATIVE PRACTICES IN VIRTUAL GROUP WORK ON DYNAMIC GEOMETRY TASKS** Younggon Bae (The University of Texas Rio Grande Valley)
11:10	**PROVING ACTS WITH DIGITAL TOOLS FOR INQUIRING INTO MATHEMATICAL PROPOSITIONS IN LEARNING GEOMETRY** Keiko Watanabe (Shiga university)
11:20	**CAPTURING COMPUTATIONAL THINKING IN EARLY MATHEMATICS EDUCATION: A CASE STUDY FROM A CHINESE KINDERGARTEN** Ying Zhang (University of Hong Kong)
11:30	**INTERACTIVE HIGH SCHOOL APPS FOR BRIDGING MATHEMATICAL LEARNING: PERSPECTIVES FROM A HIGH SCHOOL IN QUEZON CITY, PHILIPPINES** Maria Alva Aberin (Ateneo De Manila University)
11:40	**A PRELIMINARY STUDY ON 5- TO 6-YEAR-OLD CHILDREN'S SELECTION PREFERENCES AND SALIENT INFORMATION IN MATHEMATICAL SHORT VIDEOS.** Wan-Hua Deng (National Pingtung University)
11:50	**AN ANALYSIS ON THE DIGITAL ARTIFACT AFFORDANCE THROUGH ANT AND INSTRUMENTAL APPROACH** Jiyoung Kim (Seoul Dungyang Elementary School)

July 21, Monday	
10:30	**A STUDY ON THE CONSTRUCTION OF ARCUATE FIGURES IN WASANSHO** Jun Yamada (Tsushima High School)
10:40	**STUDENT VOICE WHILE USING ICT IN MATHEMATICS LESSONS: THE CASE OF INFECTION EPIDEMICS** Minoru Ohtani (Kanazawa University)
10:50	**CO-CONSTRUCTING UNDERSTANDING OF PROGRAMMING-BASED MATHEMATICS TEACHING PRACTICES IN A COMMUNITY OF INQUIRY** Huiyan Ye (The Chinese University of Hong Kong)
11:00	**EFFECTIVE USE OF SCRATCH FOR UNDERSTANDING REGULAR POLYGON IN NICARAGUAN PRIMARY EDUCATION** Isaias Alberto Granados Gonzalez (Naruto University of Education)
11:10	**FIRST-GRADE STUDENTS' IDEAS AROUND NEGATIVE NUMBERS IN MATHEMATICS-CODING INTEGRATED LESSONS** Boram Lee (Utah State University)
11:20	**THE EFFECTS ON STUDENTS' PROBLEM-SOLVING SKILLS OF ESPORTS-BASED MATHEMATICAL VIDEO LESSONS** Ronie Jake Mamala (Mariano Marcos State University, University of the Philippines - Diliman)
11:30	**A MID-CAREER MATHEMATICS TEACHER'S NOTICING OF STUDENTS' DATA INVESTIGATION PRACTICES WITH A DATA ANALYSIS AND VISUALIZATION TOOL** Takashi Kawakami (Utsunomiya University)
11:40	**USING AN AI CHATBOT TO DEVELOP PRESERVICE TEACHERS' RESPONSIVE TEACHING SKILLS** Sheunghyun Yeo (Daegu National University of Education)
11:50	**INVESTIGATING THE PEDAGOGICAL VALUE OF DIGITAL MANIPULATIVES BETWEEN US AND KOREA** Sheunghyun Yeo (Daegu National University of Education)

Topic Study Groups 7

The Essence of Mathematics Education in Affective and Emotional Aspects

Chair: Ting Ying Wang (National Taiwan Normal University)
Co-Chair: Ting Ying Wang (National Taiwan Normal University), Hiroyuki Ninomiya (Saitama University)
Corrdinator: Yunmin Kim (Chinju National University of Education)

July 19, Saturday	
10:30	**PROFILE ANALYSIS USING CLUSTERING TO EXPLORE STUDENTS' MATHEMATICS GRIT** Yuan-Horng Lin (National Taichung University of Education)
10:40	**EXPLORING THE RELATIONSHIP BETWEEN STUDENTS' PERCEPTIONS OF DOING WELL IN MATHEMATICS, MATHEMATICS CONFIDENCE, AND GROWTH MINDSETS** Anni E (The University of Melbourne)

10:50	**EFFECTS OF COLLABORATIVE CRITICAL MATHEMATICS IN A FLIPPED CLASSROOM ON STUDENTS' MATHEMATICAL DISPOSITION** Eric Loyd P. Hilario (University of the Philippines Diliman)
11:10	**MATHEMATICAL ANXIETY OF CHILEAN STUDENTS FROM A TECHNICAL-VOCATIONAL HIGH SCHOOL** Claudia Vargas (Universidad de Santiago de Chile)
11:20	**A DYNAMIC SYSTEMS APPROACH TO EMOTIONS IN MATHEMATICS LEARNING AND EDUCATION** Soohyun Baek (The University of Sydney)
11:30	**A STUDY ON THE EFFECTS OF MATHEMATICAL TOPICS AND ACTIVITY TYPES ON ELEMENTARY SCHOOL STUDENTS' MATHEMATICS ANXIETY** Chiao-En Wang (National Taipei University of Education)
11:50	**THE EFFECTIVENESS OF INQUIRY-BASED TEACHING INTEGRATED WITH COMPUTATIONAL THINKING ON MATHEMATICS ATTITUDES IN VOCATIONAL HIGH SCHOOLS** Lin-Chieh Tsai (Taipei Municipal Muzha Vocational High School)
12:00	**FOSTERING A GROWTH MINDSET IN ELEMENTARY MATHEMATICS INSTRUCTION** Giwoo Kwak (Daeheung Elementary School)

July 20, Sunday	
only proceedings	**THE TRENDS IN INSTRUCTIONAL APPROACH AND THEIR EFFECTS ON STUDENTS' MATHEMATICS ATTITUDES: AN ANALYSIS OF TIMSS DATA** Rae Yeong Kim (Korea Institute for Curriculum and Evaluation)
10:40	**IDENTIFYING APPRAISAL PROFILES AND THEIR RELATIONS WITH ACADEMIC EMOTIONS IN MATHEMATICS** Xin Chen (East China Normal University)
11:00	**AFFECTIVE COMPUTING AND NLP-DRIVEN METHODOLOGIES FOR MEASURING PROBLEM-SOLVING IN MATHEMATICS EDUCATION** I-Ping Wan (National Chengchi University)
11:10	**DEVELOPMENT OF TEACHING AND LEARNING MODEL USING META-AFFECT FOR COLLABORATIVE PROBLEM SOLVING IN MATHEMATICS** Bumi Kim (Wonkwang University)
11:20	**THE STUDY OF PRIMARY SCHOOL STUDENTS' OPINIONS IN MATHEMATICAL LITERACY-ORIENTATION QUESTIONS** Jing-Wen Chiu (Taoyuan Municipal Bade Elementary School)
11:40	**DATA LITERACY IN MATHEMATICS AND SCIENCE TEACHING: A NARRATIVE EXPLORATION OF CLASSROOM PRACTICES, TEACHER EFFICACY, AND ATTITUDE** Rachel Dorcas A. Lim (University of the Philippines)
11:50	**DEVELOPMENT OF AN ASSESSMENT TOOL FOR MEASURING STEM HABITS OF MIND** Hye-Young Byeon (Pusan National University)

July 21, Monday	
10:30	**A STUDY ON VALUE FORMATION AND TEACHER INFLUENCE OVER THREE YEARS OF JUNIOR HIGH SCHOOL IN JAPAN** Hiroshi Ishii (Hokkaido University of Education)
10:40	**VALUES ALIGNMENT IN TEACHERS' PERSPECTIVE: A STUDY IN CHINA** Haomin Fang (The University of Melbourne)
10:50	**INVESTIGATING VALUES OF TEACHERS IN COURSES FOR LOW-PERFORMING UPPER-SECONDARY STUDENTS** Justine Sakurai (The University of Melbourne)
11:10	**INTELLECTUAL HUMILITY AND MATHEMATICS PERFORMANCE** Frederick K. S. Leung (Beijing Normal University)
11:20	**A STUDY ON THE RELATIONSHIP BETWEEN MATHEMATICS ADVERSITY QUOTIENT AND MATHEMATICAL ACHIEVEMENT OF SECOND-GRADE JUNIOR HIGH SCHOOL STUDENTS —THE MEDIATING ROLE OF MATHEMATICAL ANXIETY** Yumei Xia (Beijing Normal University)
11:30	**USING HISTORICAL CONTEXTS IN NON-HISTORICAL MATHEMATICS COURSES.** Amanda Jo Meiners (Northwest Missouri State University)
11:50	**EMOTIONAL DIMENSIONS AND SOCIAL SOLIDARITY IN MATHEMATICS EDUCATION: EVERYONE ENJOYS GAMES - OR DO THEY?** Linda Bonne (Victoria University of Wellington)
12:00	**RETHINKING NEO-CONFUCIAN CONCEPTS OF LEARNING & WELLBEING** Emily Sum (The University of Melbourne)
12:10	**A STUDY ON CHILDREN'S PERCEPTIONS OF "GOOD EXPLANATION" IN ARITHMETIC** Shota Mastumoto (Shimane University)

Topic Study Groups 8

The Essence of Mathematics Education with Equity and Culture

Chair: Catherine P. Vistro-Yu (Ateneo de Manila University)
Co-Chair: Sri Adi Widodo (Universitas Sarjanawiyata Tamansiswa), Takuya Baba (Hiroshima University)
Corrdinator: Sungjae Moon (Chungbuk National University)

July 19, Saturday	
10:30	**FROM TRADITION TO TECHNOLOGY: RETHINKING MATHEMATICS EDUCATION THROUGH ETHNOMATHEMATICS IN INDONESIA** Nur Robiah Nofikusumawati Peni (Universitas Ahmad Dahlan)
10:45	**INDIGENOUS EPISTEMOLOGY AND ETHNOMATHEMATICS: INSIGHT FROM BHUJEL COMMUNITY** Jaya Bishnu Pradhan (Tribhuvan University)
11:00	**A STUDY ON MATHEMATICAL CURRICULUM IN AN INDIGENIOUS SCHOOL IN TAIWAN: FOCUSING ON THE PROCESS OF CURRICULUM DESIGN** Tai-Jung Lee (National Academy for Educational Research)

11:15	**MATHEMATICS ANXIETY ACROSS ETHNIC COMMUNITIES IN NEPAL** Krishna Chandra Paudel (Tribhuvan University)
11:30	**A STUDY ON MATHEMATICS CURRICULUM AT AN INDIGENIOUS SCHOOL IN TAIWAN: FOCUSING ON THE PRODUCTION OF MATHEMATICAL TASK** Ying-Hsuan Lee (National Academy for Educational Research)
11:45	**A PRACTICAL STUDY ON THE INDIGENOUS RITUAL CULTURE IN ELEMENTARY SCHOOL INQUIRY EDUCATION** Felisa (Hsueh-Yun) Yu (National Changhua University of Education)
12:00	**SURVEY AND STUDY OF "ETSUKI-SANGAKU," MATHEMATICAL TABLETS WITH ILLUSTRATIONS, IN FUKUI PREFECTURE, JAPAN, AND EMPIRICAL RESEARCH ON ITS UTILIZATION FOR MATHEMATICS EDUCATION** Hiroshi Kazama (University of FUKUI)

July 20, Sunday	
10:30	**SURVIVING MASTERY IN MATHEMATICS EDUCATION** Nikki Mann (Simon Fraser University)
10:45	**SECONDARY SCHOOL STUDENTS' LEVEL OF INVENTIVE THINKING IN MATHEMATICAL LEARNING** Roslinda Rosli (The National University of Malaysia)
11:00	**DIVERSE VALUES AND MATHEMATICAL THINKING FOSTERED THROUGH SOCIALLY OPEN-ENDED PROBLEMS: SIMPLIFICATION OF SOCIAL CONTEXTS** Yuichiro Hattori (Okayama University)
11:15	**DIGITAL MATHEMATICS STORYTELLING IN INDONESIA, VIETNAM, AND THE ASIAN DIASPORA: EQUITY, CULTURE, AND COMMUNITY THROUGH NARRATIVE IDENTITIES** Theodore Chao (California State University)
11:30	**CULTIVATING CRITICAL MATHEMATICS CONCIOUSNESS IN PRE-SERVICE TEACHERS THROUGH DIGITAL RESOURCES AND THE RWC MODEL** Artorn Nokkaew (Naresuan University)
11:45	**ETHICAL FOUNDATIONS FOR EXPLORING INCLUSIVE SCIENCE AND MATHEMATICS EDUCATION** Mitsuru Matsushima (Kagawa University)
12:00	**NEW POSSIBILITIES FOR PROBLEM FINDING THROUGH MATHEMATICAL MODEL AND CARING** Rintaro Ueda (Tokyo Gakugei University)

July 21, Monday	
10:30	**Small Group Discussion**
11:30	**TSG 8 Group Reporting**
12:00	**TSG 8 General Discussion**
12:15	**TSG 8 Wrap-up and Closing**

Topic Study Groups 9

The Essence of Mathematics Education in Undergraduate Level

Chair: Vilma Mesa (University of Michigan)
Co-Chair: Hans Stefan Siller (University of Würzburg), Tatsuya Mizoguchi (Tottori University)
Corrdinator: Sunyoung Han (Sungkyunkwan University)

July 19, Saturday	
11:30	**ON THE HURDLES OF PROBLEM SOLVING IN UNDERGRADUATE MATHEMATICS DISCOURSE** Igor' Kontorovich (The University of Hong Kong)
11:45	**THE ROLE OF COGNITIVE RESOURCES IN MATHEMATICS PROBLEM SOLVING** Xin Li (Suzhou University of Technology)
12:00	**AN ANALYSIS OF STUDENTS' BASIC MENTAL MODELS OF THE INTEGRAL: THE CASE OF PHYSICAL CHEMISTRY** Christian Heinz (Julius Maximilian University of Würzburg)

July 20, Sunday	
10:30	**A CASE STUDY ON STUDENTS' SELECTIVE NOTE-TAKING IN UNDERGRADUATE NUMBER THEORY LECTURE** Jeong-Won Noh (Busan National University of Education)
10:45	**ENHANCEING MATHEMATICS STUDENT TEACHERS' UNDERSTANDING IN ACTIVE LEARNING THROUGH ABSORB-DO-CONNECT LEARNING FRAMEWORK** Wanintorn Poonpaiboonpipat (Naresuan University)
11:00	**PROVING ACTIVITIES IN A GRAPH-THEORETICAL INQUIRY FOR PRE-SERVICE TEACHERS: A PRELIMINARY ANALYSIS** Minh Hong Doan Le (Hiroshima University)
11:15	**CONCEPT-BASED LEARNING IN GEOMETRY WITH GEOGEBRA IN PAPUA NEW GUINEA PRIMARY TEACHERS COLLEGES** Hanson Wambu (Naruto University of Education)
11:30	**PRESERVICE MATHEMATICS TEACHERS' CONFIDENCE TO TEACH STATISTICS** Hyung Won Kim (University of Texas Rio Grande Valley)
11:45	**PRESERVICE SECONDARY TEACHERS' PROOF ANALYSIS IN SPHERICAL GEOMETRY** Younggon Bae (The University of Texas Rio Grande Valley)
12:00	**GUIDED REINVENTION OF THE DEFINITIONS OF REDUCIBLE AND IRREDUCIBLE ELEMENTS** Younggon Bae (The University of Texas Rio Grande Valley)

July 21, Monday	
10:30	**TEACHING MATERIALS FOR DIFFERENTIAL EQUATIONS WITH APPLICATION TO STEM PROBLEMS** Satoru Takagi (Waseda University)
10:45	**A STUDY OF ACTIVITIES USING GEOGEBRA IN METHOD OF LAGRANGE MULTIPLIER** Manabu Yoshida (Yamato University)

11:00	**ROLE OF MATH DUAL ENROLLMENT ON STUDENT OUTCOMES** Jungmin Lee (University of Kentucky)
11:15	**DECISION-MAKING IN A DESIGN-BASED RESEARCH APPROACH TO COLLABORATIVE DEVELOPMENT OF INTERACTIVE TEXTBOOK QUESTIONS** Vilma Mesa (University of Michigan)

Topic Study Groups 10

The Essence of STE(A)M Education

Chair: Hyunyi Jung (Texas A&M University)
Co-Chair: Masitah Shahrill (Universiti Brunei Darussalam), Hyunkyoung Yoon (California State Polytechnic University, Pomona)
Corrdinator: Yujin Lee (Kangwon National University)

July 19, Saturday	
10:40	**IDENTIFYING ZAMBIAN GRADE 10 STUDENTS' 21ST CENTURY SKILLS IN CROSS-CURRICULAR LEARNING OF MATHEMATICS AND HOME ECONOMICS** Koki Nakashima (Yokohama National University)
11:00	**EXPLORING INQUIRY-BASED LEARNING IN SENIOR HIGH SCHOOL MATHEMATICS: A STUDY ON FINALIZED SRPS** Mitsuhiro Iwata (Senior High School at Otsuka, University of Tsukuba and Waseda University)
11:30	**A STUDY ON THE ASSESSMENT OF CREATIVE PROBLEM-SOLVING COMPETENCE USING FERMI ESTIMATION** Jungin Heo (Samjung High School)
11:50	**ENHANCING STE(A)M EDUCATION THROUGH PROJECT-BASED LEARNING: A FOCUS ON AGE-PERIOD-COHORT MODELING** Diana Jasmin S. Costales (University of Santo Tomas)

July 20, Sunday	
10:40	**EVALUATING PRACTICAL STEAM ACTIVITIES FOR STUDENT LEARNING AND ENGAGEMENT** Masitah Shahrill (Universiti Brunei Darussalam)
11:10	**EMPOWERING FEMALE MATHEMATICIANS FOR THE FUTURE OF STEAM IN BRUNEI DARUSSALAM** Masitah Shahrill (Universiti Brunei Darussalam)
11:30	**INTERDISCIPLINARY APPROACHES TO CONNECT MATHEMATICS AND SCIENCE: A CASE STUDY OF PRIMARY TEACHERS' ADAPTIVE EXPERTISE** Wanty Widjaja (Deakin University)

July 21, Monday	
10:40	**ENHANCING SELF-REGULATION AND MOTIVATION THROUGH STEM PROJECT-BASED LEARNING** Yujin Lee (Kangwon National University)
11:00	**FOSTERING AGENCY IN MATHEMATICAL MODELLING FOR CRITICAL CITIZENSHIP** Jimbo Juanito B. Villamor (Ateneo de Manila University and Surigao del Norte State University)
11:30	**INVESTIGATING TEACHER'S DESIGN OF MATHEMATICAL MODELLING TASKS TO FOSTER MATHEMATICAL LITERACY** Sakon Tangkawsakul (Kasetsart University)
11:50	**FROM STEM OVER STEAM TO STEEM BUILT ON ECONOMICS** Allan Tarp (MatheCademy.net)

5. Working Groups

Working Groups 1

July 19, Saturday	
Working Group 1-1	
16:30~18:00	**EXPLORING MATHEMATICS LESSONS FOR FOSTERING MATHEMATICAL THINKING** Yujin Seo (Korea Foundation for Science and Creativity)
Working Group 1-2	
16:30~18:00	**DEVELOPMENT OF A TEACHER TRAINING PROGRAM FOR STRENGTHENING AI DIGITAL TEXTBOOK(AIDT) UTILIZATION COMPETENCY** Seo Hyun Ahn (Ajou University)
Working Group 1-3	
16:30~18:00	**BRIDGING MINDS, BUILDING FUTURES:** **A RESEARCH COLLABORATION WORKSHOP FOR EMERGING SCHOLARS IN EAST ASIA: PART 1** Kyong Mi Choi (University of Virginia)
Working Group 1-4	
16:30~18:00	**USING GENERATIVE AI IN SECONDARY MATHEMATICS EDUCATION:** **DATA ANALYSIS, VISUALIZATION, AND GAMIFICATION** Oh Nam Kwon (Seoul National University)

Working Groups 2

July 20, Sunday	
Working Group 2-1	
16:30~18:00	**ENHANCING TEACHERS' PRACTICAL TEACHING ABILITIES THROUGH AI-SUPPORTED CLASSROOM INSTRUCTION EVALUATION** Yiming Cao (Beijing Normal University)
Working Group 2-2	
16:30~18:00	**A SERIES OF LEARNING ACTIVITIES FOR DEVELOPING THINKING-ORIENTED MATHEMATICAL COMPETENCE** Ying-Hao Cheng (University of Taipei)
Working Group 2-3	
16:30~18:00	**BRIDGING MINDS, BUILDING FUTURES:** **A RESEARCH COLLABORATION WORKSHOP FOR EMERGING SCHOLARS IN EAST ASIA: PART 2** Kyong Mi Choi (University of Virginia)
Working Group 2-4	
16:30~18:00	**DESIGNING MATHEMATICS LESSONS USING GENERATIVE ARTIFICIAL INTELLIGENCE:** **FOCUSING ON PRACTICES AT THE SECONDARY SCHOOL LEVEL** Oh Nam Kwon (Seoul National University)

Working Groups 3

July 21, Monday

Working Group 3-1	
15:30~17:00	**TEACHING MATHEMATICS FOR SOCIAL JUSTICE: CASES FORM KOREA** Jaehoon Shim (Seoul Inheon Elementary School)
Working Group 3-2	
15:30~17:00	**MATHEMATICAL HABITS OF MIND:** **A FRAMEWORK FOR UNDERSTANDING AND SUPPORTING POSITIVE DISPOSITONS TOWARD MATHEMATICS LEARNING** Jihwa Noh (Pusan National University)
Working Group 3-3	
15:30~17:00	**POETIC METHODS IN MATHEMATICS EDUCATION** Pauline Tiong (National Institute of Education)
Working Group 3-4	
15:30~17:00	**REPLACING STEAM WITH STEEM TO ALSO INCLUDE ECONOMICS** Allan Tarp (MATHeCADEMY.net)

6. Special Sharing Groups

Special Sharing Groups 1	
July 19, Saturday	
Special Sharing Group 1-1	
16:30~18:00	**IN-DEPTH EXPLORATION OF 'MATHEMATICAL LITERACY' AS A FUNDAMENTAL COMPETENCY** Yujin Seo (Korea Foundation for Science and Creativity)
Special Sharing Group 1-2	
16:30~18:00	**EXPLORING MATHEMATICS LESSONS UTILIZING DIGITAL TOOLS AND MANIPULATIVES** Yujin Seo (Korea Foundation for Science and Creativity)
Special Sharing Group 1-3	
16:30~18:00	**EXAMPLES OF INDUSTRIAL PROBLEM-SOLVING USING MATHEMATICS** Minjung Gim (National Institute for Mathematical Sciences)
Special Sharing Group 1-4	
16:30~18:00	**CHINA-KOREA MATHEMATICS EDUCATION FORUM (PART1):** **SHAPING THE FUTURE OF MATHEMATICS EDUCATION** Lianghuo Fan (University of Macau)

Special Sharing Groups 2	
July 20, Sunday	
Special Sharing Group 2-1	
16:30~18:00	**CROSSING OVER EAST ASIAN MATHEMATICS CURRICULA:** **A FOCUS ON CURRICULUM REFORM** Chaereen Han (Jeonju National University of Education)
Special Sharing Group 2-2	
16:30~18:00	**WRITING GOOD ACADEMIC PAPERS FOR EDUCATIONAL STUDIES IN MATHEMATICS** Vilma Mesa (University of Michigan)
Special Sharing Group 2-3	
16:30~18:00	**CAN A DECOLONIZED MATHEMATICS SECURE NUMERACY FOR ALL?** Allan Tarp (MATHeCADEMY.net)
Special Sharing Group 2-4	
16:30~18:00	**CHINA-KOREA MATHEMATICS EDUCATION FORUM (PART2):** **SHAPING THE FUTURE OF MATHEMATICS EDUCATION** Qiaoping Zhang (The Education University of Hong Kong)

Special Sharing Groups 3

July 21, Monday

Special Sharing Group 3-1	
15:30~17:00	**HIGH-QUALITY MATHEMATICS INSTRUCTION: WHAT DO WE MEAN?** Ban Heng Choy (Nanyang Technological University)
Special Sharing Group 3-2	
15:30~17:00	**MATHEMATICAL ARGUMENTATION FOR SUSTAINABILITY: EXPLORING THE CLAIM-EVIDENCE-REASONING (CER) FRAMEWORK IN SOCIO-SCIENTIFIC INQUIRY** Suparat Chuechote (Faculty of Education, Naresuan University)
Special Sharing Group 3-3	
only proceedings	**GLOBAL INSIGHTS AND PERSPECTIVES: EXPANDING THE REACH OF MATHEMATICS EDUCATION JOURNALS IN KOREA** Kyong Mi Choi (University of Virginia)
Special Sharing Group 3-4	
only proceedings	**OUTDOOR MATH MODELING – A UNIQUE CLASSROOM ACTIVITY WITH MATHCITYMAP** Joerg Zender (University of Cologne)

7. Poster Presentations

Poster Presentation 1

July 19, Saturday

PP1-01	**FROM TEACHER NOTICING TO VALUES ALIGNMENT PROCESS: A SYSTEMATIC REVIEW** Haomin Fang (The University of Melbourne, Faculty of Education)
PP1-02	**PROSPECTIVE TEACHER'S VIEW OF GENERATIVE AI IN MATHEMATICS** Yutaka Ohara (Gakushuin University)
PP1-03	**BLENDED LEARNING STATION ROTATION MODEL AND STUDENTS' ENGAGEMENT IN MATHEMATICS LEARNING** Rashidah Vapumarican (CHIJ Kellock, Ministry of Education)
PP1-04	**DEVELOPMENT AND ANALYSIS OF MATHEMATICS MOTIVATION SCALE FOR ELEMENTARY SCHOOL STUDENTS** Yuan-Horng Lin (National Taichung University of Education)
PP1-05	**EVALUATION OF MATHEMATICS CLASSROOM INSTRUCTION IN THE ERA OF ARTIFICIAL INTELLIGENCE** Yiming Cao (Beijing Normal University)
PP1-06	**THE ROLE OF METACOGNITION AND INTELLECTUAL NEED FOR MATHEMATICAL ACTIVITIES** Daiki Kuroda (Gifu Shotoku Gakuen University)
PP1-07	**AFFORDANCE OF PROGRAMMING FOR INTRODUCING TRIGONOMETRIC FUNCTIONS** Chung Man Koo (Hong Kong Taoist Association the Yuen Yuen Institute No.2 Secondary School)
PP1-08	**HOW PRE-SERVICE TEACHERS DEVELOP LESSON PLANS USING CHATGPT** Sunghwan Hwang (Chuncheon National University of Education)
PP1-09	**DESIGNING GRAPHING TASKS FROM THE GROUND UP** Hwa Young Lee (Texas State University)
PP1-10	**ENHANCING JUNIOR HIGH SCHOOL STUDENTS' SELF-REGULATED LEARNING IN ALGEBRA THROUGH GENERATIVE AI: APPLICATION DEVELOPMENT AND PRELIMINARY FINDINGS** Changhua Chen (National Changhua University of Education)
PP1-11	**TASK MODIFICATION BY PRE-SERVICE MATHEMATICS TEACHERS: AN ANALYSIS FOCUSED ON DEFINITIONS OF GEOMETRIC SIMILARITY** Nam-Hyeok Im (Chungbuk National University)
PP1-12	**AN INVESTIGATION OF THE RELATIONSHIP BETWEEN PISA 2022 TAIWANESE STUDENTS' CURIOSITY AND MATHEMATICAL LITERACY** Wan-Chih Shih (National University of Tainan)
PP1-13	**THE RELATIONSHIP OF STRESS RESISTANCE AND MATHEMATICAL LITERACY: A LATENT CLASS ANALYSIS** Pi-Ying Li (National University of Tainan)
PP1-14	**SUPPORTING LOCALIZED AND CONTEXTUALIZED LEARNING IN BASIC CALCULUS USING BILINGUAL MODULES: A PRELIMINARY INVESTIGATION** Jake Garnace (University of Northern Philippines)
PP1-15	**STUDENT EXPERIENCES AND BARRIERS IN MATHEMATICAL CREATIVITY** Yujin Lee (Kangwon National University)

PP1-16	**STUDENTS' CONCEPTION OF LEARNING DURING PROGRAMMING-RICH MATHEMATICAL ACTIVITIES** Oi-Lam Ng (The Chinese University of Hong Kong)
PP1-17	**A SYSTEMATIC LITERATURE REVIEW OF THE EMPIRICAL STUDIES ON STEAM EDUCATION IN KOREA: 2011-2019** Kyungwon Lee (Seoul National University)
PP1-18	**DEVELOPMENT AND APPLICATION OF AI MATHEMATICS DIGITAL TEXTBOOKS: FOCUSING ON THE KOREAN CASE** Mangoo Park (Seoul National University of Education)
PP1-19	**PROPORTIONAL REASONING IN THE THIRD GRADES OF ELEMENTARY SCHOOL: FOCUSING ON THE COMPOSED UNIT** Hisae Kato (Hyogo University Teacher Education)
PP1-20	**CONSTRUCTION OF THE LEARNING PROCESS OF GRAPH THEORY IN SCHOOL MATHEMATICS: THE EVOLUTION OF THE REPRESENTATION WORLD OF GRAPH** Yuki Tanimoto (Graduate School of Comprehensive Human Sciences, University of Tsukuba)
PP1-21	**CULTIVATING ENTREPRENEURSHIP IN PRESERVICE MATHEMATICS TEACHERS: A CASE OF THE INDUSTRY AND MATHEMATICS EDUCATION COURSE** Kyungwon Lee (Seoul National University)
PP1-22	**PROPOSAL FOR A THEORETICAL FRAMEWORK TO CAPTURE SPONTANEOUS THOUGHTS WHEN CONSIDERING A CONVERSE PROPOSITION** Takeshi Ando (Graduate School of Comprehensive Human Sciences, University of Tsukuba)
PP1-23	**INTERPRETING THE VALUE OF THE TERM "CONSISTENCY" IN CHINA'S NEW MATHEMATICS CURRICULUM STANDARD FOR COMPULSORY EDUCATION** Wenyu Xu (Graduate School of Comprehensive Human Sciences, University of Tsukuba)
PP1-24	**TASK DESIGN TO ENHANCE MATHEMATICAL LEARNING MOTIVATION THROUGH REALISTIC MATHEMATICS EDUCATION** Pui Yan Wong (The Chinese University of Hong Kong)
PP1-25	**THE RELATIONSHIP BETWEEN GENDER AND MATH COMPETENCE BELIEFS THROUGH REFLECTED TEACHER APPRAISAL IN JAPAN AND THE U.S.** Kim Megyesi-Brem (Claremont Graduate University)
PP1-26	**COMMUNICATING WITH METAPHORS: A LONG-TERM CASE STUDY FOR THIRD GRADE ELEMENTARY SCHOOL STUDENTS** Kensuke Koizumi (Yokohama National University)
PP1-27	**A NARRATIVE STUDY ON MATHEMATICS LEARNING INTERACTION BETWEEN PARENTS AND STUDENTS IN LOWER ELEMENTARY SCHOOL** Bo-Myoung Ok (Dankook University)
PP1-28	**A STUDY ON APPLYING IDENTICAL HISTORY OF MATHEMATICS RESOURCES IN DIFFERENT INSTITUTIONS** Yi-Wen Su (University of Taipei)
PP1-29	**EXPLORING AI IN MATHEMATICS EDUCATION FROM THE PERSPECTIVE OF EDUCATIONAL EQUITY AND INCLUSION** Ryoonjin Song (Hanyang University)

Poster Presentation 2

July 20, Sunday

PP2-01	**STUDENTS' PERSPECTIVES ON THE RELATIONSHIP BETWEEN QUADRATURE FORMULAE IN ARITHMETIC** Ryuta Tani (Tanaka Gakuen Ritsumeikan Keisho Primary School)
PP2-02	**THE IMPACT OF DIFFERENT PROMPTS ON CREATIVE PERFORMANCE IN PROBLEM POSING TASK** I-Tieh Lin (National Taiwan Normal University)
PP2-03	**A NEW APPROACH OF MATHEMATICAL PROBLEM SOLVING ON THE PREMISE OF USING SCIENTIFIC CALCULATOR: BYOND ALGORITHMIC THINKING/COMPUTATIONAL THINKING** Akio Matsuzaki (Saitama University)
PP2-04	**EXPLORING PEDAGOGICAL DILEMMAS IN AN ITS-BASED MATHEMATICS COURSE** Eun Young Cho (Korean Bible University)
PP2-05	**CHILDREN'S OWN BUNDLE-NUMBERS WITH UNITS MAY REACH THE UNITED NATIONS DEVELOPMENT NUMERACY GOAL** Allan Tarp (Mathecademy.net)
PP2-06	**JOURNAL WRITING IN JUNIOR COLLEGE LEVEL CLASSROOMS: EXPLORING MULTIMODAL EXPRESSIONS AND REFLECTIVE PRACTICES** Nan Dai (Anglo Singapore International School)
PP2-07	**DEVELOPMENT OF A PROGRAMMING LEARNING ENVIRONMENT THAT INDUCES DIALOGUE WITH THE COMPUTER** Shigeki Kitajima (Meisei University)
PP2-08	**IDENTITIES OF STUDENTS' MATHEMATICS TEACHER AS THE STORIES OF OTHERS** Yuriko Kimura (Graduate School of Comprehensive Human Science, University of Tsukuba)
PP2-09	**INVESTIGATING THE IMPACTS AND CHALLENGES OF MATHEMATICAL MODELLING ACTIVITIES ON STUDENTS' LEARNING DEVELOPMENT** Aslipah Tasarib (The National University of Malaysia)
PP2-10	**FROM RULES TO ONTOLOGIES: EVOLVING APPROACHES TO GENERATIVE MULTI-STAGE ASSESSMENT** Jinmin Chung (University Iowa)
PP2-11	**INVESTIGATING NOVICE MIDDLE SCHOOL MATHEMATICS TEACHERS' NOTICING SKILLS IN VIRTUAL TEACHING SIMULATION USING EYE-TRACKING TECHNOLOGY** Yung-Chi Lin (National Tsing Hua University)
PP2-12	**DEVELOPING AN FNIRS ASSESSMENT TOOL FOR STUDENTS' FRACTIONAL STRUCTURE BASED ON APOS THEORY** Doyeon Ahn (Korea National University of Education(KNUE))
PP2-13	**COMPARATIVE STUDY OF THE PERSPECTIVES AND ACCEPTANCE OF UNIVERSITY STUDENTS WITH DIFFERENT EXPOSURES TO GENERATIVE ARTIFICIAL INTELLIGENCE** Ming Fai Chung (The University of Hong Kong)
PP2-14	**TEACHERS' BELIEFS ON MATHEMATICAL PROBLEM- SOLVING WIHTIN PROJECT-BASED LEARNING** Yixuan Liu (Central China Normal University)

PP2-15	**COMPARING THE MATHEMATICAL CREATIVITY OF JUNIOR HIGH SCHOOL STUDENTS IN TAIWAN ACROSS TWO REAL-WORLD CONTEXTS** Lan-Ting Wu (National Taiwan Normal University)
PP2-16	**SEVENTH GRADE ALGEBRAIC WORD PROBLEMS FROM THE PERSPECTIVE OF MATHEMATICAL MODELLING** Alvin Chan (Good Hope School)
PP2-17	**LESSON PLANNING TO TEACH FOR DIVERSITY AND EQUITY** Mi-Kyung Ju (Hanyang University)
PP2-18	**HOW DO KOREAN MIDDLE SCHOOL STUDENTS MAKE VIDEOS RELATED TO MATHEMATICS?** Kyungwon Lee (Seoul National University)
PP2-19	**EXPLORING INQUIRY-BASED LEARNING IN MATHEMATICS TEACHER EDUCATION** Hideyo Makishita (Yamato University)
PP2-20	**PRACTICE LESSONS USING INSTRUCTIONAL VIDEOS** Mahiko Takamura (Tokyo Polytechnic University)
PP2-21	**DEVELOPMENT AND EFFECT ANALYSIS OF AUGMENTED REALITY TOOLS FOR MATHEMATICAL MODELING** Sang Yeon Jo (Seoul National University)
PP2-22	**AN INTRODUCTION TO THE WORLD OF DATA ANALYSIS USING DATA FROM THE ENVIRONMENT** Luis Eduardo Amaya-Briceño (University of Costa Rica)
PP2-23	**AN ANALYSIS OF THE CONTEXT OF PROBABILITY EDUCATION IN JAPANESE MATHEMATICS TEXTBOOKS FROM LOWER SECONDARY SCHOOL TO UPPER SECONDARY SCHOOL: WITH NEGATIVE CAPABILITY AS A BACKGROUND** Hiroto Fukuda (Okayama University of Science)
PP2-24	**FACTORS THAT PROMOTE STUDENTS' SENSE OF BELONGING IN DIVERSE INTRODUCTORY MATHEMATICS CLASSES** Sarah Park (University of Georgia)

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KOREA 2025 수학

EARCOME9

The 9th ICMI-East Asia Regional Conference on Mathematics Education

바른 교과서 만들기

Since

동아출판은 우리나라 최초의 교과서와 함께 시작되었습니다.
교과서와 함께한 700,000여 시간,
동아출판 교과서는 우리나라 교육의 중심이 되었습니다.

꿈을 키우는 내일의 주인공을 위해
꿈을 가꾸는 오늘의 선생님을 위해
새로운 경험과 가치를 선사하는 바른 교과서를 만들겠습니다.

바른 교과서가 우리의 미래입니다.
동아출판은 바른 교과서를 만듭니다.

동아출판

동아출판 교실 수업 지원 플랫폼
두클래스
초등 ele.douclass.com
중고등 mh.douclass.com

세상을 담는 한 권의 책,
우리의 책에는 미래가 담겨있습니다.

우리는 교육에 대한 균형 잡힌 철학을 바탕으로
지식, 인성, 문화를 이끄는 가치를 만듭니다.

풍부한 경험, 전문가의 땀과 열정으로
아이들의 미래를 함께 계획합니다.

창의성이라는 경쟁력 없이는 어려운 세상에서
우리 모두가 주연이 될 수 있는 개성을 담아냅니다.

17년의 노하우를 녹인 아이스크림 콘텐츠가 이제, 아이들의 미래를 보는 창이 됩니다.

i-Scream media

Let's Learn Math with TocToc! Math Expedition

Android | ios | web

01 Exciting Math Adventures Through Games!

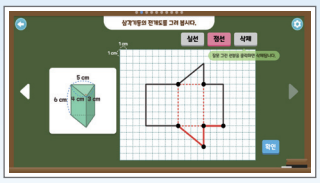
- TocToc! Math Expedition offers fun, game-based math learning content that makes learning easy and engaging.
- Students can naturally develop math concepts by playing games and completing exciting expedition missions.
- With TocToc!, math becomes more than study — it becomes joyful play!

02 A Smart Teaching Assistant for Educators

- Conveniently manage your class with the built-in Learning Management System (LMS).
- Track progress and understanding by student and class through insightful reports and analytics.
- Use digital manipulatives to create engaging and hands-on math lessons.

03 Personalized AI Learning at Home and School

- Students can enjoy self-directed learning not only in class but also at home.
- Parents can monitor their child's learning progressanytime.
- With just a smart device or computer, math learning is accessible anytime, anywhere.



04 Available for All Elementary (Grades 1–6)

- Fully aligned with the national curriculum for Grades 1–6.
- Includes printable worksheets and real-life class examples using TocToc! Math Expedition.

Join the adventure with TocToc! Math Expedition

www.toctocmath.kr

교육부 Ministry of Education | 17개 시·도교육청 | KERIS KOREA EDUCATION AND RESEARCH INFORMATION SERVICE

KERIS KOREA EDUCATION AND RESEARCH INFORMATION SERVICE

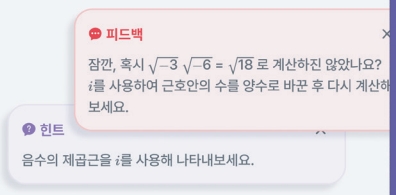
The Korea Education and Research Information Service (KERIS), a government-funded organization under Korea's Ministry of Education, has developed 『TocToc Math Expedition』, Korea's first AI-powered math learning support platform for public education.

수학대왕 TURING

Boosting student performance through intelligent personalization
Mobile & Web AI Math Platform for K-12 (Grades from 3rd to 12th)

AI-generated similar problems
AI가 찾아주는 유사 문제

Hint / Feedback
힌트 / 피드백

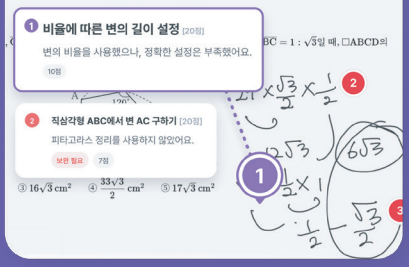


수학대왕 APP 바로 가기

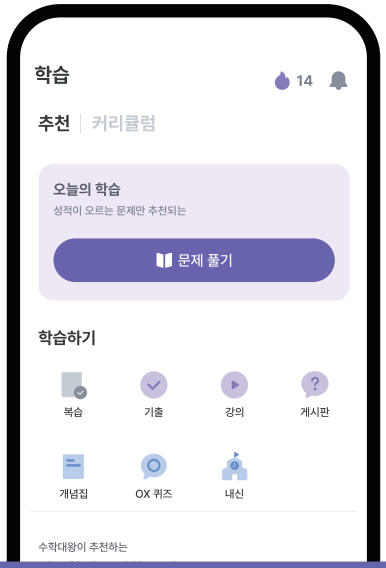
Google Play

App Store

AI solution-path analysis
AI 필기 분석



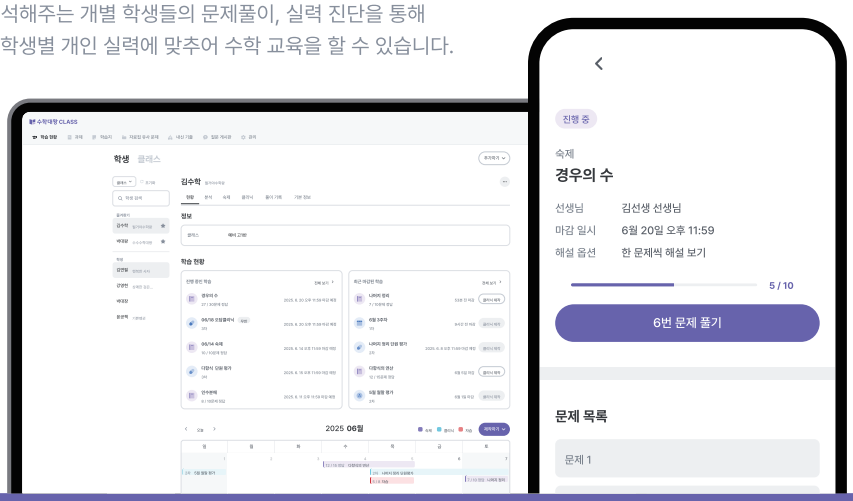
수학대왕
AI-recommended questions based on your ability and learning pace
AI 맞춤 문제 추천



수학대왕 CLASS

Math King Class is a web-based platform for teachers and parents that makes it effortless to assign AI-generated worksheets and diagnostics, and it's already in use at schools and academies across Korea.

수학대왕 CLASS를 통해 교사 및 학부모도 혁신적인 AI 수학 교육을 경험할 수 있습니다.
이미 국내의 많은 학교/학원에서도 수학대왕 CLASS 서비스를 사용하고 있습니다.
AI가 추천한 학습지를 손쉽게 생성하여 학생들에게 과제나 평가를 내줄 수 있으며,
AI가 분석해주는 개별 학생들의 문제풀이, 실력 진단을 통해
교사는 학생별 개인 실력에 맞추어 수학 교육을 할 수 있습니다.



Prepare personalized lessons grounded in AI-driven analysis and data.
개인 실력에 맞는 맞춤형 문제로 자기주도적 학습

Student 학생

Design personalized lessons with AI-driven insights and data.
클래스별, 학생별 학습 현황과 AI 실력 분석 제공

수학대왕 CLASS

Prepare personalized lessons grounded in AI-driven analysis and data.
AI가 제공하는 분석과 데이터를 바탕으로 맞춤형 수업 준비

Teacher 선생님

Math King https://www.iammathking.com
Math King Class https://class.iammathking.com
Email business@teamturing.com
Location Seoul, South Korea (서울특별시 강남구)

TURING

kt investment 특허청 OpenAI

선생님을 위한
All-In-One 교수학습지원 서비스 T셀파

활용하기 좋은 콘텐츠와 편리한 에듀테크를 한곳에!

수업의 모든 것을 지원하는 T셀파를 지금 만나 보세요.

All-In-One
교수학습지원 서비스
T셀파

내용

최고 품질의 교과서와 현장 교사들의 아이디어가 결합된 다양한 콘텐츠

- 차시별 **교과 학습 자료**
- 차시별 **수업 보충 자료**
- **전과목 교육 과정** 자료
- **학교 자율 시간** 자료
- 교사 콘텐츠 공유 플랫폼 **'쌤채널'**

방법

교수 학습 활동의 효과성과 효율성을 동시에 만족시켜 줄 수 있는 에듀테크 수업 도구

- 증거 기반 학급 경영 도구 **'우리반T셀파'**
- 온라인 워크시트 /토론/퀴즈 **'클래스핑퐁'**
- 새로운 디지털 수업 공간 **'클래스보드'**
- 새로운 대화의 시작! **'AI실험실'**

평가

최고의 교과서 기반 평가 문항을 이용한 온/오프라인 평가 지원 서비스

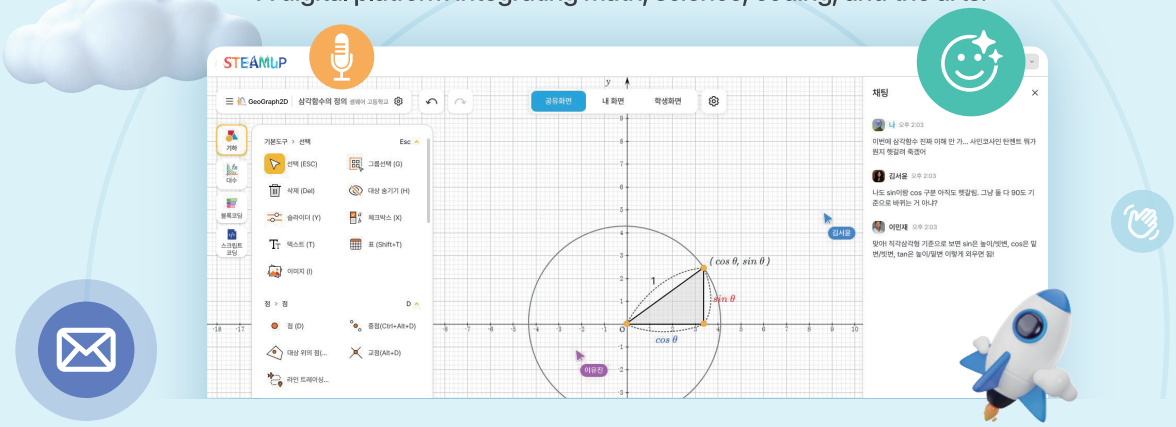
- 문제 출제, 시험지 편집 논스톱 서비스 **'문제은행'**
- 공교육 특화! AI 평가분석 서비스 **'지니아튜터'**

더 효과적인 우리 반 수업, T셀파와 함께하면 달라집니다.

What is STEAMuP?

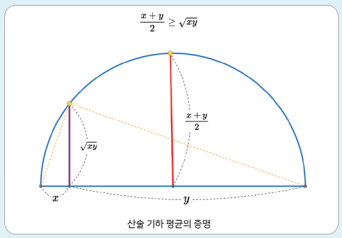
A Next-Generation
Digital Learning Environment

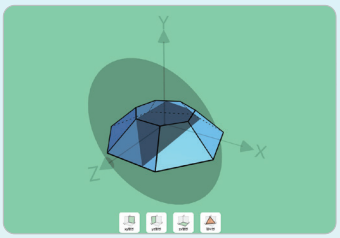
A digital platform integrating math, science, coding, and the arts.

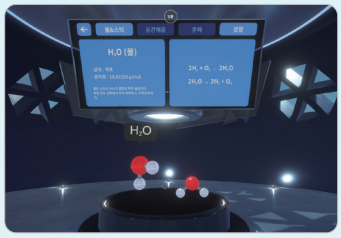


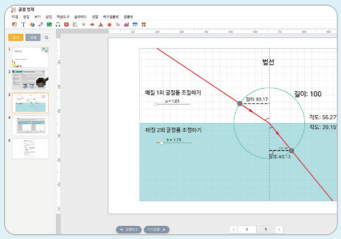
✦ STEAMuP Tools ✦

A comprehensive suite of digital tools for STEAM education.









2D Math & Science Tools

Visualize and simulate math, science, and AI concepts in an inter active 2D environment.

3D Math & Science Tools

Explore spatial reasoning, scientific models, and astronomical concepts in 3D.

Immersive Content

Hands-on AR/VR-based learning experiences for deeper engagement.

Lesson Authoring Tools

Build customized lesson materials with STEAMuP's intuitive editors and classroom tools.

✦ STEAMuP Classroom ✦

A complete digital classroom environment to support interactive and personalized learning.

LIVE CLASS

Host interactive, two-way lessons with your students using learning tools and real-time collaboration features.

Digital Courseware

Access curriculum-aligned materials and STEAM content created with our learning tools.

User-Created Lessons

Design and customize your own lessons freely using our learning tools and intuitive editors.

Groups

Efficiently manage your class with dashboards for distributing lesson materials and tracking student progress.