

Teaching and Learning of Mathematical Modelling



Invited Speaker



Gabriele Kaiser

Professor, University of Hamburg, Germany & Nord University, Norway

Gabriele Kaiser holds a master's degree as a teacher for mathematics and humanities for lower and upper secondary level. She completed her doctorate in mathematics education in 1986 with a study on applications and modelling. Since 1998, she is full professor for mathematics education at the Faculty of Education of the University of Hamburg. Her areas of research are empirical studies on teacher education and teachers' professionalism, modelling and applications in school, international comparative studies, gender and cultural aspects in mathematics education. She was convenor of the 13th International Congress on Mathematical Education in 2016. Since 2005 she is editor-in-chief of the high-ranking journal ZDM – Mathematics Education. In addition, she is editing several book series at national and international level amongst others International Perspectives on Mathematical Modelling. Since 2019 she is president of the ICMI affiliate group "The International Community of Teachers of Mathematical Modelling and Applications" (ICTMA). From 2017 to 2021 she was a professorial fellow at the Institute for Learning Sciences and Teacher Education at the Australian Catholic University in Brisbane (Australia). Currently, she holds an additional 0.2 professorship at Nord University in Bodø (Norway).

Talk 1

State-of-the-art on Research of the Teaching and Learning of Mathematical Modelling

The promotion of mathematical modelling comprising competencies to solve real-world problems using mathematics, is accepted as a central goal of mathematics education worldwide, especially connected to the promotion of responsible citizenship. In many national curricula, modelling competencies play a central role, supporting the relevance of mathematical modelling at a broad international level. Although there is wide consensus on the relevance of modelling in schools, there is considerably less consensus on how to integrate mathematical modelling into mathematical teaching-and-learning processes. In the presentation, based on the description of interesting modelling examples the results of empirical studies concerning the promotion of mathematical modelling competencies in mathematics education will be presented from an international perspective. First, the results of empirical studies on the measurement and promotion of modelling competencies will be presented, then the results of studies on the promotion of affective aspects in the connection of mathematical modelling.

Time/Access

March 10th, 2022 (Thu) 6:00 pm ~ 7:30 pm (KST)
March 10th, 2022 (Thu) 10:00 am ~ 11:30 am (CET)
March 9th, 2022 (Wed) 4:00 am ~ 5:30 am (EST)
March 9th, 2022 (Wed) 1:00 am ~ 2:30 am (PST)
Zoom Online Meeting

Talk 2

Role of Metacognition, Teacher Interventions and Creativity in the Teaching and Learning of Mathematical Modelling

In this presentation empirical results on selected topical perspectives on the teaching and learning of mathematical modelling will be presented, namely metacognition, teacher intervention and creativity. The need of the promotion of metacognition as looking over one's own shoulder is promoted already for more than one decade as each step of the modelling cycle describing modelling activities contains possible cognitive barriers, which need metacognitive knowledge and strategies such as planning, monitoring, regulating and evaluating the modelling activities. Possible support by the teachers need to foster the autonomous work of the students by different scaffolding measures and different kind of strategic help following the principal of minimal help. The need for creativity within mathematical modelling has become apparent in most recent empirical studies with creativity needed in each step of the modelling cycle. Each of these research strands will be described theoretically and with results on empirical studies.

Time/Access

March 24th, 2022 (Thu) 6:00 pm ~ 7:30 pm (KST)
March 24th, 2022 (Thu) 10:00 am ~ 11:30 am (CET)
March 23rd, 2022 (Wed) 5:00 am ~ 6:30 am (EST)
March 23rd, 2022 (Wed) 2:00 am ~ 3:30 am (PST)
Zoom Online Meeting

Moderator

Oh Nam Kwon

Professor, Department of Mathematics Education, Seoul National University Director,
Center for Research in Mathematics Education

[Go to Registration ▶](#)

Registration

Please register to participate by **Mar 8th 6:00 pm (KST)**.
Zoom Link will be sent on **Mar 9th 9:00 am (KST)**.

Contact

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