

Mathematical Modeling in Connecting Concepts to Real World Application

Zhonghe Wu and Lijun Ye

Aim and Rationale

In recent years, achieving mathematics proficiency has received notable attention [RAND 2003; National Research Council (NRC) 2001] What useful, appropriate, practical, and effective strategies can be developed and used to enhance student proficiency in mathematics is still a puzzle to mathematics educators. This urgent need becomes a challenging task for mathematics educators seeking research-based strategies to support classroom teachers to enhance their teaching leading to student proficiency.

The Mathematical Modeling is a research-based teaching model (Lesh and Zawojewski 2007; Niss et al. 1991) that builds conceptual understanding and problem solving skills. The mathematical modeling also reflects the core components of proficiency defined by research studies (Hill and Ball 2004; NRC 2001; RAND 2003)—conceptual understanding, computational skills, problem solving, mathematical reasoning, and mathematical disposition.

Organizers Co-chairs: Zhonghe Wu (USA), Lijun Ye (China); Team Members: Shuhua An (USA), Zhongxiong Fan (China), Ling Wang (China); Liaison IPC Member: Morten Blomhoej (Denmark).

Z. Wu (✉)
National University, California, USA
e-mail: zwu@nu.edu

L. Ye
Hangzhou Normal University, Hangzhou, China
e-mail: yeatsylj@126.com

Key Questions

The following five broad areas frame the territory of the discussion.

- What is Mathematics Modeling? Why Mathematics Modeling?
- What is the relationship between mathematical modeling and mathematical proficiency? What does role of Mathematics Modeling play in teaching and learning mathematics for K-12 students?
- How is mathematical modeling used in primary school?
- How is mathematical modeling used in secondary school?
- What are the challenges and issues of mathematical modeling in teacher professional development?

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