OECD's Programme for International Student Assessment (PISA)

Ministry of Education—Singapore

Mathematical Modeling Process (version 2010)

Real World

- Formulating
  - Understand the problem
  - Make assumptions to simplify the problem
  - Represent the problem mathematically

Mathematical World

- Mathematical Model
  - Solving
    - Select and use appropriate mathematical methods and tools (including ICT)
    - Solve the problem and present the solution

Real World

- Reflecting
  - Reflect on the real-world solution
  - Improve the model

Mathematical World

- Interpreting
  - Interpret the mathematical solution in the context of the real-world problem
  - Present the solution of the real-world problem

Real World Solution

- Mathematical Solution

21st Century Skills

- Critical Thinking
- Creativity
- Research & Inquiry
- Self-direction, Initiative, and persistence

Contexts

- Personal
- Occupational
- Societal
- Scientific

Challenge in a Real World Context

- Information Use
- Systems Thinking
- Communication
- Reflection