A MODEL FOR THE PRIMARY SCHOOL STUDENTS' MATHEMATICAL MODELING COMPETENCY: A GROUNDED THEORY ANALYSIS

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Four important strands shaped the debate on mathematical modelling competency (Kaiser & Brand, 2015). The German modelling group proposed the concept of modelling competency based on different sub-competencies and found some different models of modelling competency, such as the five sub-competencies model. The Australian modelling group emphasized that modelling competency should include metacognition. Previous studies paid inadequate attention to primary school students, so this study constructed a model of the primary school students' mathematical modelling competency through grounded theory.

METHOD

This study carried out case studies and selected 6 fifth-grade students and 6 sixth-grade students from China as the objects of study. Thinking aloud was used to collect students' thinking process of solving mathematical modelling tasks which were translated and adapted from published modelling education studies and books.

RESULTS

This study obtained 370 codes and finally formed 7 categories and 2 main categories. Based on the coding results, a mathematical modelling competency model for primary school students was established:

Competency	Sub-Competency
Modelling Process Competency	Understanding Information; Making Models; Working Mathematically; Interpreting and Validating
Metacognitive Modelling Competencies	Orienting and Planning; Monitoring and Regulating; Evaluating and Improving

Table 1: The Model for the Primary Students' Mathematical Modelling Competency

References

Kaiser, G., & Brand, S. (2015). Modelling competencies: Past development and further perspectives. In G. A. Stillman, W. Blum, & M. S. Biembengut (Eds.), *Mathematical modelling in education research and practice* (pp. 129-149). Springer.

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