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Effects of a holistic versus an atomistic modelling approach on students' mathematical modelling competencies.

Nicol, Cynthia (ed.) et al., Proceedings of the 38th conference of the International Group for the Psychology of Mathematics Education "Mathematics education at the edge", PME 38 held jointly with the 36th conference of PME-NA, Vancouver, Canada, July 15–20, 2014, Vol. 2. [s. 1.]: International Group for the Psychology of Mathematics Education (ISBN 978-0-86491-360-9/set; 978-0-86491-362-3/v.2). 185-192 (2014).

Summary: The paper deals with the question of the practicability and the effectiveness of different approaches to foster students' mathematical modelling competencies. Within the modelling project ERMO (Acquirement of modelling competencies) a holistic and an atomistic approach of mathematical modelling were compared in order to find out which approach is more effective in fostering the students' modelling competencies. The results of modelling tests with three measurement points show that both approaches foster students' modelling competencies, but both approaches have strengths and weaknesses. The data indicates that the holistic approach is more effectively for students with weaker performance in mathematics.

Classification: M10 C30 D40

Keywords: modeling; modeling competencies; holistic approach; atomistic approach; performance