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Tracing students' modeling processes in school.

Lesh, Richard (ed.) et al., Modeling students' mathematical modeling competencies. ICTMA 13. Proceedings of the 13th international conference on the teaching of mathematical modelling and applications, July 22–26, 2007. London: Springer (ISBN 978-1-4419-0560-4/hbk; 978-1-4419-0561-1/ebook). 119-129 (2010).

Summary: In this study, we report on an analysis of the mathematization processes of one 6th and one 8th grade group, with emphasis on the similarities and differences between the two groups in solving a modeling problem. Results provide evidence that all students developed the necessary mathematical constructs and processes to actively solve the problem through meaningful problem solving. Eighth graders who were involved in a higher level of understanding the problem presented in the activity employed more sophisticated mathematical concepts and operations, better validated and communicated their results and reached more efficient models. Finally, a reflection on the differences in the diversity and sophistication of the constructed models and mathematization processes between the two groups raises issues regarding the design and implementation of modeling activities in elementary and lower secondary school level.

Classification: M13 D53

Keywords: mathematical modeling; problem solving; grade 6; grade 8; educational research; comparative studies

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