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Assessing modelling competencies using a multidimensional IRT approach.

Kaiser, G. (ed.) et al., Trends in teaching and learning of mathematical modelling. Proceedings of the 14th international conference on the teaching of mathematical modelling and applications, ICTMA, Hamburg, Germany, July 27–31, 2009. Berlin: Springer (ISBN 978-94-007-0909-6/hbk; 978-94-007-0910-2/ebook). International Perspectives on the Teaching and Learning of Mathematical Modelling 1, 427-437 (2011).

Summary: We assessed students' modelling competency using a test consisting of different classes of items. Within the first class there are items which cover the whole modelling process, whereas items of the second class focus only on certain parts of this process. To cope with the requirements of the two different classes of items we used a multidimensional Rasch model including subdimensions. In this chapter we describe the structure of the test instrument and compare the subdimensional scaling of the test results with a unidimensional one. The analyses show the superiority of the subdimensional scaling.

Classification: M10 D60

Keywords: modeling competence; achievement measurement; educational research

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