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A reflection on mathematical modelling and applications as a field of research: theoretical orientation and diversity.

Stillman, Gloria Ann (ed.) et al., Mathematical modelling in education research and practice. Cultural, social and cognitive influences. Cham: Springer (ISBN 978-3-319-18271-1/hbk; 978-3-319-18272-8/ebook). International Perspectives on the Teaching and Learning of Mathematical Modelling, 161-171 (2015).

Summary: This chapter explores the nature of theoretical approaches used in mathematical applications and modelling research literature focusing on the orientation and diversity of these approaches within this field. The study is based on the document analysis of a sample of book chapters from significant scholarly volumes dedicated to applications and modelling published between 2002 and 2011. Our analysis reveals that: research is oriented towards learners and teachers rather than to contexts for learning; the number of chapters that tied theory to practice increased whilst chapters focused on purely professional issues decreased; the diversity of theoretical approaches utilised increased over time; and, use of local theories specific to mathematical modelling coalesce around two approaches.

Classification: M10 D20

Keywords: modeling; mathematical applications; diversity of theory

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