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Advancing mathematics education research within a STEM environment.

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Summary: In presenting the final chapter for this Research into Mathematics Education in Australasia (RiMEA) book, I first give consideration to the official curriculum and the operational curriculum as a basis for exploring how we might advance mathematics education research within our Science, Technology, Engineering and Mathematics (STEM) environment. Next, I present an overview of some of the core features of the current national and international spotlight on STEM education. From this basis, I argue that the roles and positioning of mathematics are in danger of being overlooked or diminished within the increased STEM framework. As one approach to lifting the profile of mathematics, I explore problem-solving and modelling across STEM contexts. In utilising findings from the chapter reviews together with my own research, I offer suggestions for (a) developing content and processes through idea-generating problems, (b) promoting in-depth content understanding, and (c) fostering general skills and processes. Next, I address the advancement of modelling across STEM contexts and illustrate this with a problem set within an environmental engineering context. I conclude by offering a few avenues for further research.

Classification: D20 D30 D40 M10

Keywords: STEM education; official curriculum; operational curriculum; problem solving; general skills and processes; modelling; 21st century skills; workplace learning

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