related to science education in the Asia-Pacific region, as well as offering insights for conducting studies in this region and outlining possible questions for further investigation. In addition, we anticipate that the specific resources and strategies introduced in this book will provide a useful reference for curriculum developers and science educators when they design school science curricula and science both pre-service and in-service teacher education programmes. The first section of the book examines features of science learners and learning, and includes studies investigating the processes associated with scientific conceptual learning, scientific inquiry, model construction, and students’ attitudes towards science. The second section focuses on teachers and teaching. It discusses some more innovative teaching approaches adopted in the region, including the use of group work, inquiry-based instruction, developing scientific literacy, and the use of questions and strategies. The third section reports on initiatives toward assessment and curriculum reform, including initiatives associated with school-based assessment, formative assessment strategies, and teacher support accompanying curriculum reform. The Open Access version of this book, available at http://www.atyourservicebooks.com/bookid/9781107167789, has been made available under a Creative Commons Attribution-Non Commercial-Share Alike 4.0 license.

Mathematics for Physics Michael Stone 2004-07-09 An engaging-written account of mathematical tools and ideas, this book provides a graduate-level introduction to the mathematics used in research in physics. The first half of the book focuses on the traditional mathematical methods of physics -- differential and integral equations, Fourier series and the calculus of variations. The second half contains an introduction to more advanced subjects, including differential geometry, topology and complex variables. The authors’ exposition avoids excess rigor whilst exploring subtle but important points often glossed over in more elementary texts. The topics are illustrated at every stage by carefully chosen examples, exercises and problems drawn from models in physics settings. These make it useful both as a textbook in advanced courses and for self-study. Readily-potential solutions to the exercises are available to instructors at www.cambridge.org/9780521854030.

STEM Integration in K-12 Education National Research Council 2014-02-28 STEM Integration in K-12 Education examines current efforts to connect the STEM disciplines in K-12 education. This report identifies and characterizes existing approaches to integrated STEM education, both in formal and other informal school settings. The report reviews the evidence for the impact of integrated approaches on various student outcomes, and it proposes a set of priority research questions to advance the understanding of integrated STEM education. STEM Integration in K-12 Education proposes a framework to provide a common perspective and vocabulary for researchers, practitioners, and others to identify, discuss, and investigate specific integrated STEM initiatives within the K-12 education system of the United States. STEM Integration in K-12 Education makes recommendations for designers of integrated STEM experiences, assessment developers, and researchers to design and document effective integrated STEM education. This report will help to further their work and improve the chances that some forms of integrated STEM education will make a positive difference in student learning and interest and other valued outcomes.

Networking of Theories as a Research Practice in Mathematics Education The chances that some forms of integrated STEM education will make a positive difference in student learning and interest and other valued outcomes.

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