Call for Papers for Special Issue of Research in Mathematics Education (RME): Contemporary issues in Mathematics Education within a STEM Climate

Special Issue Editors

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Rationale

The study of mathematics in the compulsory school curriculums of many countries is positioned as being significant, and often associated with individual and societal benefits described in curriculum and policy documents (Jablonka & Skilling, 2018). Benefits often speak to economic competitiveness and the use of mathematics in particular occupations in science, technology and engineering, including the widening of participation of students in higher education study for which mathematical competency is required.

Over the last two decades, the study of science, technology, engineering and mathematics has been encouraged as the STEM climate has gained momentum. While there is much curricular and pedagogical debate about how STEM disciplines can be effectively integrated in school settings, ongoing discussion and inquiry about the future of STEM education is encouraged because of the perceived benefits for improved learning outcomes, increased participation, and student engagement (Anderson & Li, 2020).

Within the current climate of STEM education and integrated learning, mathematics faces both opportunities and challenges. Several educators have highlighted the central role of mathematics within STEM programs, with Lyons (2018) indicating that while all four disciplines are essential to the STEM construct, “mathematics is foundational” (p. 40). In a similar vein, Mayes (2019) argued that mathematics is fundamental to integrated STEM activities, while the Committee on STEM Education (2018) listed “Make mathematics a magnet” as a core objective in engaging students in transdisciplinary experiences.

Despite mathematics being cited as the core of STEM education and foundational to the other disciplines (e.g., English, 2017; Shaughnessy, 2013), it is frequently ignored in integrated STEM activities (Mayes, 2019; Shaughnessy, 2013). Yet, as Baldinger, Staats et al. (2021) highlighted, “Despite at least a century of educational interest in connections between mathematics and science (Berlin & Lee, 2005), the role of mathematics in integrated STEM teaching and learning remains unclear, understudied, and misunderstood” (p. 68). Therefore, the focus of this Special Issue is to seek papers that identify and critically report on research that addresses meaningful mathematics learning opportunities for students in light of contemporary challenges and affordances in the current STEM climate.

Outline and scope

The broad focus for this special issue is research in mathematics education for advancing STEM learning and literacy across school systems and grades. STEM education recognises

the valuable knowledge base of individual STEM disciplines and also the relevance of related strands such as geoscience, biotechnologies and programming. Recent global events have raised awareness of the current STEM climate where it has been seen that complex health and environmental issues are impactful at global, societal, and personal levels. This underscores the critical role of STEM education and literacy for informed and meaningful decision making. Although many school curriculums currently offer STEM learning through separate disciplines there is a need to explore how integrated and multidisciplinary approaches can support deep learning of mathematics knowledge and skills. In doing so, it is important to address the challenges integrated STEM approaches pose for curriculum, pedagogical, and teacher preparedness and practice.

The editors for this Special Issue seek papers that identify and critically report on research that addresses contemporary challenges, solutions, and affordances for mathematics education within STEM. Suggested topic areas include:

- The role of mathematics in STEM education addressing disruptive events
- STEM educational experiences that promote students' mathematical learning
- STEM experiences that enhance students' emotional and affective engagement in mathematics
- Innovative mathematics approaches that support pre-service and/or in-service teachers in advancing mathematics learning within STEM
- Applications of design, engineering, and technology to mathematics education
- Mathematical concepts and processes that promote STEM learning, including quantitative reasoning, spatial reasoning, statistics, and others
- Mathematical task design incorporating concepts and processes applicable across the STEM disciplines
- Initiatives that empower all students to access and apply mathematics learning to STEM activities

For this RME Special Issue, we invite submissions (7000-8000 words) from a range of empirical methodologies and theoretical studies that provide further insights into 'Contemporary issues in Mathematics Education within a STEM Climate'.
Interested authors should submit their expression of interest in the form of an **Abstract** (400-500 words) emailed to rme@bsrlm.org.uk by **15th December 2023**. Please include the names and institutions of all authors as part of the expression of interest.

Timeline:

15th December 2023	Titles and abstracts submission
31st January 2024	Abstract decisions
15th June 2024	Submission of first drafts
30th September 2025	Completion of Reviewer feedback
31st January 2025	Revision submitted
30th April 2025	Special issue finalized and sent to publishers
June 2025	Expected Publication

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