Call for Papers
Science & Education

Nature of STEM or Nature of S, T, E, M?
Investigating the Interdisciplinary Foundations and the Educational Applications of STEM

Description

Science & Education Journal invites papers investigating the interdisciplinary underpinnings of STEM (short for science, technology, engineering and mathematics) and STEM education. The interdisciplinary underpinnings can include historical, philosophical and sociological approaches. In recent years there has been increasing emphasis on STEM education in international curriculum and policy documents (National Science and Technology Council, 2013; The Royal Society Science Policy Centre, 2014). A key argument in the proposals for STEM education is that science, technology, engineering and mathematics workers play a pivotal role in economic growth and STEM education produces critical thinkers, scientifically literate professionals and citizens, and enables the next generation of innovators. The infusion of "engineering practices" in the *Next Generation Science Standards* in the USA signals curriculum policy level argument for STEM teaching and learning that integrates related domains to science teaching and learning. Furthermore, there has been plethora of journals, research centres and community organisations that have made STEM a central educational goal, and many funding agencies are supporting research and development efforts to make STEM education effective.

But what exactly does STEM mean? Is the concept of "STEM" authentic? Is there a particular nature to STEM or are there disciplinary variations across science, technology, engineering and mathematics? What are the epistemic, cognitive, cultural and social underpinnings of STEM and what do they imply for STEM education? The journal invites theoretical and empirical papers that address related questions that include but are not exclusive to the following:

- What are the community practices of professionals in STEM fields and what do these practices imply for STEM education?
- What is the impact of incorporating STEM practices in education on learners and teachers?
- What professional development programmes can be designed to improve pre-service and in-service teachers' understanding of the nature of STEM and STEM disciplines?
- What are the epistemological aims and values of science, technology, engineering and mathematics? Do these aims and values overlap or are they distinct in each discipline?
- Are the arguments for the collective and interdisciplinary teaching of science, technology, engineering and mathematics justified from an epistemological point of view?
- What informal learning opportunities are there to encourage understanding of the historical, philosophical and sociological accounts of STEM?
- What are the implications of potential epistemological variation in the STEM disciplines for teaching and professional development of teachers?
- What can scholarship in history, philosophy, sociology and related meta-perspectives on science contribute to policy studies on STEM education?

About the Journal

Science & Education publishes research using historical, philosophical, and sociological approaches in order to improve teaching, learning, and curricula in science and mathematics. In addition, the journal disseminates accounts of lessons, units of work, and programs at all levels of science and mathematics that have successfully utilized history and philosophy. The journal promotes the inclusion of history and philosophy of science and mathematics courses in science and mathematics teacher education programs. Moreover, it promotes the discussion of the philosophy and purpose of science and mathematics education and their place in and contribution to the intellectual and ethical development of individuals and cultures. To achieve its goals, *Science & Education* fosters collaboration among an interdisciplinary group of scholars including scientists, mathematicians, historians, philosophers, cognitive psychologists, sociologists, science and mathematics educators, and school and university teachers.

Editorial team

From January 2020, the following editorial team will manage the manuscript review process:

Editor-in-Chief: Professor **Sibel Erduran**, University of Oxford, United Kingdom
Associate Editor: Associate Professor **Olivia Levrini**, University of Bologna, Italy
Associate Editor: Professor **Maurício Pietrocola**, University of São Paulo, Brazil
Book Reviews Editor: Associate Professor **Gábor Áron Zemplén**, Budapest University of Technology and Economic, Hungary

Timeline

Deadline for submission of papers: October 30th, 2019

Submission procedure

Instructions for the preparation and submission of manuscripts can be accessed at the following website:

https://www.springer.com/education+%26+language/science+education/journal/11191?detailsPage=pltci_1060572