

epiSTEME-3

**International Conference to Review Research in Science,
Technology and Mathematics Education**

**Mumbai, India
January 5–9, 2009**

Proceedings

Editors

**K. Subramaniam
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Organised by

**Homi Bhabha Centre for Science Education
Tata Institute of Fundamental Research, Mumbai, India**





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Preface

The epiSTEME-3 conference is the third in a series of biennial conferences meant to review research world-wide in science, technology and mathematics education. It is being organised by the Homi Bhabha Centre for Science Education, a National Centre of the Tata Institute of Fundamental Research, Mumbai, India.

Science, technology and mathematics education have, in recent decades, emerged as lively new research areas. This research, inspired by issues of learning and teaching, has clear uniting themes in the cognitive, pedagogical, historical, philosophical and socio-cultural aspects of the sciences. The name epiSTEME connotes, at one level, a systematic study of knowledge, while as acronym it suggests a meta-view of science, technology and mathematics education.

The epiSTEME conferences aim to bring together researchers in the neighbouring disciplines of science, technology and mathematics education, and in the disciplines that inform this research such as history and philosophy of science, cognitive and socio-cultural studies. Conference epiSTEME-3 continues the tradition of interdisciplinary exchange. Conference epiSTEME-1 was held in 2004 and epiSTEME-2 in 2007 (see www.hbcse.tifr.res.in/episteme).

The papers to be presented at the Conference, both through oral and poster presentations, are included in this volume. They have been grouped under the following strands:

- Strand 1: Historical, philosophical and socio-cultural issues relevant to STME
- Strand 2: Cognitive studies of STM learning
- Strand 3: Curriculum and pedagogical studies
- Strand 4: Systemic change and teacher professional development in STME

The Conference Programme includes eleven review talks from leaders in the field of STM education. Each review talk addresses an important current research strand; some of them explicitly address issues of situating research in the context of practice. Abstracts of these talks are included in this volume. The full review talks will be published in a separate volume.

Conference epiSTEME-3 received 77 submissions relevant to the scope of the conference. These submissions were blind-reviewed by two or three peer reviewers. Papers accepted by at least two reviewers were accepted for the conference. Of these, 22 papers slotted for oral presentation and 16 for poster presentation at the Conference are included in this volume. We thank all the reviewers; their names appear at the end of this volume.

We thank Smita Patil and Manoj Nair for layout and typesetting of the Proceedings. Their meticulous and painstaking work has made a huge contribution. We also thank Arindam Bose, Shamin Padalkar, Saurav Shome, Ruchi Kumar and Shweta Naik for help with proof reading. All these people helped us in managing the deadlines.

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