

TSG 14: Innovative approaches to the teaching of mathematics

Papers presented by distribution

These papers have all been peer-reviewed and accepted for publication in association with this TSG by distribution via this website.

Reviewers were: Claudi Alsina, Anne Watson, Urs Kirchgraber, Wong Khoon Yoong and Marcos Cherinda.

Aims and Focus of these papers

The aim of this group is to present some methods for teaching mathematics which can be described as ‘innovative’ when compared to exposition-and-exercise, dominant use of textbook or programmed published materials. The methods presented are generic, that is they can be used with a wide range of topics. The group is a showcase for ‘cutting-edge’ thinking about ways of teaching mathematics which may take a range of learning theories into account. The emphasis is on the learning possibilities presented by pedagogic techniques. We were particularly interested in receiving papers about work and projects which have not been extensively reported in research journals, and we provided help with English where required.

This collection will be augmented as ICME approaches by further papers from more who will be presenting ‘in action’ during the sessions.

As editors of this collection, it became clear to us that ‘innovation’ has many different meanings and the papers we received crossed a broad spectrum. Most papers addressed at least two aspects of practice, and some addressed several. We identified five dimensions of innovation which appear to organise the field:

- New ways to engage students affectively in mathematics
- New ways in which learning might take place
- New teaching methods
- Introduction of new topics and contexts into the curriculum
- Use of new technologies

We have not categorised the following papers, because most of them would fall into several headings.

We hope that those expecting to attend the TSG will access this collection before the conference and add knowledgably to the discussions in the sessions and on this website.

What questions, doubts and resolutions arise for you after reading one or more of these papers?

Is it the case that all these papers indicate improved, or different, learning as a result of innovation? If not, what has changed?

Are the methods and ideas presented here usable in all contexts, or only some contexts? What would be required for an innovation to be of generic usefulness or effectiveness?