Mathematical Knowledge in Teaching

An introduction to the seminar series and the opening seminar

SUPPORTED BY THE NUFFIELD FOUNDATION

MATHEMATICAL KNOWLEDGE IN TEACHING
SEMINAR 1 - CAMBRIDGE - JANUARY 2007

- The series will draw together current ideas and evidence about the forms and functions of mathematically-related knowledge which enable teachers to support successful student learning of mathematics.
- The aim is to establish a more complete and coherent framework for analysing key issues of policy and practice.
- The threefold objectives of the series are to achieve a critical conceptual synthesis, to establish significant professional implications, and to identify major research needs.

- Much work in this field has taken for granted the conceptions of mathematical knowledge, successful learning, and effective teaching reflected in the customary educational practices familiar to the researchers.
- We will adopt a more detached viewpoint which seeks to take explicit account of differing perspectives on such matters, as well as of changing perspectives.

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The seminar series topics

- Conceptualising and theorising mathematical knowledge in teaching
- Mathematical knowledge in teaching: the case of division and fractions
- Auditing and assessing mathematical knowledge in teaching
- Mathematical knowledge in teaching: the case of argumentation and proof
- Developing and deepening mathematical knowledge in teaching
- Formulating a research agenda on mathematical knowledge in teaching

Core participants

- academics researching and working in this area
- research students active in this area
- representatives from national agencies
- school- or LEA-based teacher-developers/mentors
- academics active in undergrad maths provision

Occasional participants

- researchers/teacher-educators and school- or LEA-based teacher-developers/mentors associated with the local institution
- visiting international academics active in researching this area

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http://www.maths-ed.org.uk/mkit/

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Each plenary speaker will:

1. Select and explicate a particular concept, system of concepts, or developed theory which provides significant insight into key forms of mathematical knowledge which play a part in successful teaching.
2. Provide some illuminating illustration/exemplification of this concept, system or theory in action/in evidence in analysis of the part played by mathematical knowledge in successful teaching.
3. Explain how and why these ideas represent a significant intellectual advance on, or alternative to, earlier ones.
4. Identify significant implications of bringing these ideas to bear on the practices of teaching, and of teacher education and development.

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In addition to critically appraising and developing these ideas and arguments, the focus of conference discussions will be on:

i. Identifying commonalities and contrasts, complementarities and conflicts between the assumptions, conceptions and implications of different concepts, systems and theories.

ii. Identifying any significant limitations of these concepts, systems and theories in illuminating important practical issues.

iii. Identifying any significant limitations of current policy and practice in acknowledging important insights from these concepts, systems and theories