

*A synthesis of the presentations
to stimulate further discussion*

Kenneth Ruthven
University of Cambridge

Framework for synthesis of
presented papers

- Key ISSUE identified in relation to mathematical knowledge in teaching
- Earlier RECEIVED perspective
- Productively RECONCEIVED perspective

Goulding - *Mathematical subject knowledge in primary teacher training*

- **ISSUE**
Subject matter knowledge used in teaching
- **RECEIVED**
Teacher SMK conceived as equivalent in form and function to student SMK
- **RECONCEIVED**
Teacher SMK conceived as having differentiated facets functionally adapted to teaching task

Tirosh & Even - *Teachers' knowledge of students' mathematical learning*

- **ISSUE**
Model of student learning guiding teaching
- **RECEIVED**
Learning modelled in formal/behavioural terms of acquisition of curricular content
- **RECONCEIVED**
Learning modelled in cognitive/cultural terms of development of underlying mental models and participatory competence

Steinbring - *Corpus of scientific knowledge or result of social constructions*

- ISSUE
Epistemics of classroom knowledge creation
- RECEIVED
Teacher communication of transparent knowledge in systematic formulation
- RECONCEIVED:
Student construction of mediated knowledge through interactive negotiation

Hodgen - *The situated nature of mathematics teacher knowledge*

- ISSUE
Organisation of teacher math'l knowledge
- RECEIVED
Teacher math'l knowledge assumed to be readily transferable in principled terms
- RECONCEIVED
Considered that teacher math'l knowledge may be more specifically situated within particular task and lesson scripts

Commonalities of conceptualisation across the presentations

- Emphasis on facets of math'l knowledge functionally adapted to teaching role
- Emphasis on a teaching role centred on supporting student knowledge construction
- *others to be proposed and discussed*

Contrasts in conceptualisation across the presentations

- Facets of mathematical knowledge in focus
- Directness with which didactical ideas are taken as actionable in classroom practice, and framed in such terms
- *others to be proposed and discussed*

Limitations of these perspectives in illuminating practical issues

- Overemphasis on model of teaching for student knowledge construction calling for range and depth of mathematical knowledge not readily attainable in teaching force?
- Overemphasis on pedagogical subject knowledge as residing in the teacher rather than as distributed across teacher and high quality pedagogical resources?
- *others to be proposed and discussed*

Limitations of policy & practice in terms of these conceptualisations

- Current notions of effective teaching tend to underestimate complexity of learning and resilience of intuitions?
- Current asymmetry of teacher and student roles tends to increase the gap between mathematical knowledge developed as student and called for as teacher?
- *others to be proposed and discussed*