

Scientific and mathematical understanding

outputs of TLRP projects

Professor Celia Hoyles,
London Knowledge Lab, Institute of Education
University of London

Professor John Leach
Centre for Studies in Science and Mathematics Education
University of Leeds



Projects

Techno-Mathematical Literacies in the Workplace

Celia Hoyles, Richard Noss, Phillip Kent, David Guile

Workplace personalised learning environments for the development of employees' technical communicative skills

Celia Hoyles, Alan Brown, George Magoulas, Alexandra Poulouvassillis, Richard Noss

Towards Evidence based Practice in Science Education

Robin Millar, John Leach, Jonathan Osborne, Mary Ratcliffe

5-14 Mathematics in Scotland: The Relevance of Intensive Quantities:

Christine Howe, Terezinha Nunes, Peter Bryant

Projects (ctd)

The Role of Awareness in the Teaching and Learning of Literacy and Numeracy in Key Stage 2:

Terezinha Nunes, Peter Bryant, Jane Hurry

Learning Scientific Concepts in Small Groups in Authentic Classrooms at Key Stage 1

Stephen Hodgkinson

Keeping open the door to mathematically-demanding FE and HE programmes

Julian Williams, Pauline Davis, Geoff Wake, Su Nicholson, Graeme Hutcheson, Laura Black

Home-School Knowledge Exchange and Transformation in Primary Education

Martin Hughes, Andrew Pollard, Guy Claxton, David Johnson, Jan Winter

five issues

1. research-practice interface
2. ter
citi
3. na plus a gap?
ma
4. as
5. exchange across boundaries

the research-practice interface

- 'science'
 - 'disc'
 - 'who'
 - ...a
- We need models of – and investment in –
*research evidence-informed design and
evaluation of teaching sequences/learning
environments.*

tension: science/mathematics for citizenship & for specialists

- C
 - p
- We need clarity about the purposes of the science and mathematics curriculum – and progression routes into further study/work

nature of learning in science & in mathematics

- do We need to design teaching situations with
- te better clarity about learning aims, and how they're best promoted.
- la

assessment

value of subject

- currency of grades
- high risk

student aspirations

- to meet e.g a course requirement not *actual* use in future
- personal satisfaction

Assessment (ctd)

manner of assessment is strong determinant of

– what is taught

– how

teach

per We need better & broader measures of assessment to include e.g. disposition & affect...yet

wider

– re

– promote more connectionist teaching

– promote more research-informed teaching

exchange across boundaries

information often fails to fulfil its *intended* role in
fa

need We need to orchestrate determined efforts to
design to cross boundaries

- iterative co-design
- policy commitment

posi

boundaries

What's not here?

- gender

and.....

thank you

discussion