



National Research and Development Centre
for adult literacy and numeracy



Research Review

Adult numeracy: review of research and related literature

Synopsis

This report reviews UK and international research and related literature on adult numeracy. It first considers conceptual issues in adult numeracy in the context of *Skills for Life*, numeracy/mathematics education as a research domain, reviews of research and the survey evidence of adults' numeracy skills.

It then examines numeracy in context, which includes its context and transfer, the investigation of the use of mathematics in everyday life, mathematics and employment and financial literacy.

The review goes on to look at learning and teaching in adult numeracy, which embodies policy and provision of adult numeracy and literacy in England, teacher education and diverse learners.

Finally it considers factors affecting learning. It investigates affective factors, mathematics anxiety, dyscalculia, brain function in mathematical activity and research methods and methodological issues in research on adult numeracy.

Key Points

❑ Adult numeracy is fast developing but under-researched, under-theorised and under-developed. It is a deeply contested concept, which may best be considered as mathematical activity situated in its cultural and historical context. Research and capacity building are required in: theory; policy; teaching and learning; teacher education; communication between stakeholders; international comparative studies.

❑ Surveys reveal low levels of adult numeracy in England, with deleterious effects on individuals, the economy and society. The measurement of adult numeracy skills is problematic, especially for adults

with lower ability levels (including special educational needs and dyscalculia) and with possible reading and/or language difficulties.

❑ The need for adult numeracy/mathematical skills, including the communication of information based on mathematical data, is being progressively extended throughout the workforce as a result of the pressure of business goals and the introduction of IT. Employees increasingly need to have broader general problem-solving skills, inter-relating IT with mathematics.

❑ Research on adults' 'numeracy practices' suggests that they are diverse – as are learners themselves – and deeply embedded in the contexts in which they occur and that 'transfer' of learning between contexts may be problematic, posing a challenge for teachers attempting to relate the curriculum to learners' contexts.

❑ Evidence on the impact of adult numeracy tuition is sparse and unreliable. Detailed studies are required, including longitudinal studies. School sector projects where pupils are encouraged to construct their own meanings in mathematics and make connections with the world beyond the classroom and with other elements of mathematics, demonstrate improvements in attitude and attainment.

❑ Adult numeracy teacher education is currently undergoing major transformation. Some teachers' inadequate subject knowledge is a continuing concern. Studies with children suggest that: initial and ongoing teacher education increases subject knowledge, facilitates career development and encourages future research and development; effective teaching correlates with engagement in continuing professional development (CPD).

Background and rationale of research

This project aims to review what is known about adult numeracy, to identify gaps in our knowledge and understanding, draw out the implications for practice and make recommendations for further research.

Main elements of research

The review spans English-language sources covering research from around the world relevant to, as well as directly about, adult numeracy/mathematics teaching and learning and teacher education, mainly at the levels encompassed by the Adult Numeracy Core Curriculum. A selection of sources from the following categories has been reviewed:

- Academic literature;
- Professional literature;
- Government/official reports;
- Electronic publications (web pages, etc.);
- 'Grey' literature, e.g., non-confidential reports produced by organisations for limited circulation.

The outcomes comprise the report and a bibliography with annotations, to be available as a searchable database.

The report encompasses qualitative and quantitative investigations and critical commentary. Also reviewed in the report and included in the database are relevant policy documents. These are included because they help to define the area in which researchers labour. The review and database are as comprehensive as possible, with approximately 2500 references in the bibliographical database.

Research team

Project Director

Diana Coben

Research contributors

Dhamma Colwell; Sheila Macrae; Jo Boaler; Margaret Brown and Valerie Rhodes of King's College.

References and further reading

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Contact for further information:

Dr Diana Coben
NRDC,
Room 709,
Institute of Education,
University of London,
20 Bedford Way,
London WC1H 0AL

Telephone: 020 7612 6592
email: d.coben@ioe.ac.uk



The full report will be available from September 2003 in PDF and Word formats from NRDC's website at

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Publications
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