MEI®
Mathematics Education Innovation

Over 50 years at the forefront of Mathematics Education
What mathematics education research have you come across lately?

Stephen Lee
(MEI Research and Evaluation Manager)
About MEI

- Registered charity committed to improving mathematics education
- Independent UK curriculum development body
- We offer continuing professional development courses, provide specialist tuition for students and work with employers to enhance mathematical skills in the workplace
- We also pioneer the development of innovative teaching and learning resources
Questions – for you…

• Are you a teacher, an academic, work in industry…

• Do you have any specific interest in maths education research and/or publications?

• What do you hope you might get out of the session?
The good, the bad and the…

...non-peer reviewed!

Many, many excellent ‘academic’ publications that get ‘very little attention’ because of their availability, but…

…conversely some ‘publications’ are made freely available into the public domain and get a big ‘media’ presence, without necessarily going through any rigorous peer-review process.

Check the context upon which you are reading something!
Chartered College of Teaching

- DfE funding until 2020 (up to £5m)
- Membership fees (£45 per year - teacher/affiliate)

- Chartered Teacher (CTeach) from Sept 2017

- Chartered Mathematics Teacher (CMathTeach) has been available since 2010 via a consortium of professional bodies - ATM/IMA/MA/NANAMIC, see: www.cmathteach.org.uk/
Chartered College of Teaching

A new journal for teachers

- Designed for a teacher audience - with teacher submissions
- Focused on classroom practice
- Original research and examples of seminal research used in practice
- Termly, themed and peer-reviewed
- Guest editors
- Eminent editorial board
- Online edition with additional content for student teachers
Chartered College of Teaching

Research databases that you gain access to:

• British Education Index
• Child Development & Adolescent Studies
• EBSCO eClassics Collection
• Education Abstracts (H.W. Wilson)
• Education Research Complete
• Education Source
• Education Resource Information Center
• Educational Administration Abstracts
Publication Details For "British Educational Research Journal"

Title: British Educational Research Journal

ISSN: 0141-1926

Publisher Information: Wiley-Blackwell
9600 Garsington Road
Oxford OX4 2DQ
United Kingdom of Great Britain & Northern Ireland

Bibliographic Records: 04/01/1978 to present

Full Text: 03/01/1990 to present (with a 12 Month delay)
*Full text delay due to publisher restrictions ("embargo")

Publication Type: Academic Journal

Subjects: Education (General); Great Britain

Description: An international forum for articles of interest to researchers in education.

Publisher URL: http://www.wiley.com/WileyCDA/

Frequency: 6

Peer Reviewed: Yes
‘Academic’ Publications

• Accessing the materials can often be difficult and/or expensive (if you’re not in an academic/university environment)
  – Journals
  – Membership publications
  – Conference proceedings, i.e. hard copy only
  – Though a changing situation with ‘open-access’ (free) sites and electronic proceedings
MEI are here to keep you informed!

- Are you aware of the MEI ‘Reports/Publications’ webpages?
Reports

This page provides links to a number of publications relating to mathematics education. The relevant publications include reports and letters published by external organisations and reports, articles and conference papers prepared by MEI staff.

Please use the links below to navigate to pages containing more information.

Position Papers: MEI produces papers detailing where we stand on key issues affecting mathematics education.
External Reports: Reports (and letters) relating to mathematics education
MEI Staff Publications: Reports, articles and conference papers prepared by MEI staff

Suggest a report

If you would like to suggest a report to be included on this page please contact:
Stephen Lee
Some ‘relevant’ research

- Perceptions of AS/A levels, GCSEs and Other Qualifications in England
  (YouGov)

- REVAMP
  (Nottingham University)

- The Maths needs of HE
  (Cambridge Assessment)
YouGov report

- 71 pages
- Chapters on:
  - Composite confidence measure
  - Perceptions of GCSEs
  - Perceptions of AS/A levels
  - New 9 to 1 grading scale
  - National reference test
  - The review of marking, moderation and appeal
  - Special considerations
  - Vocational qualifications
YouGov report

Responses:

262 head teachers
601 teachers of GCSE, AS/A level and other general and vocational qualifications offered to 15- to 19-year-olds (referred to throughout this report as teachers)

313 young people, defined as those aged 15 to 19 who are studying/have studied/will study AS/A levels and/or GCSEs and/or other general and vocational qualifications

261 parents/carers of students who are taking or who have just taken AS/A levels, GCSEs and/or other general and vocational qualifications

265 academic professionals¹ who had knowledge about the process of offering applicants a place on an undergraduate course at their institution (referred to throughout this report as HEIs)

264 senior/middle managers who worked for an organisation that has recruited young people (aged 16 to 25) in the past 12 months (referred to throughout this report as employers)

1,008 members of the public

Overall: Confidence in GCSE and A level systems!
REVAMP research project

- Rethinking the Value of Advanced Mathematics Participation - Nuffield Foundation (£156,733) June 2013 to December 2016
- Other (current/recent) Nuffield funded maths projects:
  - The early take up of Core Mathematics, University of Leeds, £256,285, March 2017 to Feb 2020
  - Low attainment in maths: an investigation of Year 9 students, Nottingham/Kings/Durham, £245,066, Sept 2015 to Feb 2018
  - Developing teachers’ mathematical knowledge using digital technology, IOE UCL, £198,439, December 2014 to April 2017
  - Achievement and attitudes in GCSE maths resit classes, MMU, £82,202, December 2014 to May 2017
  - Using lesson study for teaching mathematical problem-solving, University of Nottingham, £170,565, Jan 2014 to Dec 2016
REVAMP research project

• Publications:

• Final report:
REVAMP research project

• 33 page final report, which cites four strands of quantitative analysis:
  – Updated research on economic returns to A level Mathematics
  – Analysis of changing participation in A level Mathematics from 2005-13
  – Modelling of the relationship between A level Mathematics and degree outcomes
  – A national survey of ten thousand 17-year-old

• See ‘findings’ summary hand out
The Maths needs of HE

- Cambridge Assessment project into the mathematical needs of higher education

Publications:
The Maths needs of HE

Overarching findings

Survey response from over 4000 undergraduates. 2,250 had previously studied AS or A level Further Mathematics.

“Undergraduates of STEMM and Social Science subjects who took AS or A-level Further Mathematics prior to going to university generally enjoyed studying it and believed that it was beneficial preparation for the mathematical demands for their degree.”

“Students’ motivations for studying Further Mathematics reflected the varying mathematical demands of undergraduate courses.”

“prior success in Mathematics was a strong motivating factor for many participants”
BSRLM

- Three ‘day’ conferences per year with associated proceedings (+more, i.e. journals)

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- 390 pages!
- Lots of great research going on into maths education in the UK and overseas
- BCME – 9 (2018)

British Congress of Mathematics Education

BCME - 8

in collaboration with the British Society for Research into Learning Mathematics

2014
MEI publications

• See handout

• General strategy to write in ‘accessible’ places that are freely available to be read.

MEI Staff Publications (See: www.mei.org.uk/staff-publications)

In Press/submitted


Baldwin, C & Lee, S (in press) Exploring the new AS and A levels in Mathematics and Further Mathematics, The Institute of Mathematics and Its Applications (IMA) Mathematics TODAY,

2017


2016


How to keep up to speed…

…on ‘recent reports’

• Social Media – Twitter / Facebook / Blog posts
• Distribution/newsletter mailing lists
• Websites, i.e. MEI reports pages!

…on ‘research publications’

More difficult due to some ‘access’ issues, but as above and:

• Review relevant conference proceedings
• Periodically check ‘free’ journal database sites, at least for ‘titles’, e.g. www.jstor.org, http://scholar.google.co.uk http://doaj.org
• Ask for updates from academics in your area of interest
What to take away?

- Handouts! (with recent ‘external’ reports and MEI staff publications on them)
- Some ideas for where you might access up-to-date publications
- A wider appreciation of the different mediums for publications as well as the range

- The belief that undertaking, collaborating and sharing of work and thoughts on mathematics education and publishing them is a good thing!
Getting involved

• What are good mechanisms for maintaining up to date knowledge of mathematics education reports and research?

• How can collaboration best be facilitated between teachers and mathematics education researchers?
MEI Conference 2017

What mathematics education research have you come across lately?

Stephen Lee
Stephen.lee@mei.org.uk
External Report

Recent reports (and letters) relating to mathematics education (see www.mei.org.uk/reports-external):

2017

- Retention and Recruitment of Teachers, The Education Committee (2017)
- Rethinking the Value of Advanced Mathematics Participation, Noyes & Adkins (2017)

2016

- Making maths and English work for all - The review of what employers and learners need from the maths and English qualifications taken by young people and adults, ETF (2015)
- Professional learning for all teachers of mathematics, ACME (2016)
- Making education your business: A practical guide to supporting STEM teaching in schools and colleges, Royal Society (2016)
- Through the lens of students: how perceptions of higher education influence applicants’ choices, UCAS (2016)
- Perceptions of A Levels, GCSEs and Other Qualifications in England – Wave 14, YouGov (2016)
- Improving Level 2 English and maths outcomes for 16 to 18 year olds - Literature review, Education Endowment Foundation (2016)
- Unpacking qualification reform, UCAS (2016)
- The UK STEM education landscape, Royal Academy of Engineering (2016)
- A marked improvement? EEF (2016)
- Why your business should go back to school: How can you inspire the next STEM generation, Project Enthuse (2016)
- Measuring up: International case studies on the teaching of quantitative methods in the social sciences, British Academy (2016)

2015

- Flipped learning, NFER and NESTA (2015)
- A level subject take up, Ofsted (2015)
- Making maths and English work for all - The review of what employers and learners need from the maths and English qualifications taken by young people and adults, ETF (2015)
- Developing Great Teaching: Lessons from the international reviews into effective professional development, TDT (2015)
- The earnings and employment returns to A levels, London Economics (2015)
- The Gender Agenda: STEMing the gap, Adecco (2015)
• A vision for education – beyond five-year policy cycles, SSAT (2015)

2014

• Mathematics after 16: the state of play, challenges and ways ahead, Josh Hillman, Nuffield Foundation (2014)
• Vision for science and mathematics education, Royal Society, (2014)
• Research and the Teaching Profession, BERA and RSA, (2014)
  Mathematical transitions - a report on the mathematical and statistical needs of students undertaking undergraduate studies in various disciplines, Higher Education Academy, (2014)
• A blueprint for mathematics education – maths snapshots, ACME (2014)
• PISA 2012 Results: Creative Problem Solving: Students' skills in tackling real-life problems (Volume V), OECD (2014)
• PISA 2012 Results: England-specific overview, OECD (2014)
• Engineering our future - Stepping up the urgency on STEM, CBI (2014)
• Cost of outcomes associated with low levels of adult numeracy in the UK, Pro Bono Economics, National Numeracy (2014)

2013

• Empowering teachers: success for learners, ACME (2013)
• Report from the expert panel on core mathematics (2013)
• Fit for Purpose? The view of the higher education sector, teachers and employers on the suitability of A levels, Ofqual (2013)
• Independent Chair's report on the review of current GCE 'specification content' within subject criteria: A report to Ofqual, Smith, M. (2013)
• A world full of data: Statistics opportunities across A-level subjects, Royal Statistical Society and the Institute and Faculty of Actuaries (2013)
• Evaluation of the Mathematics Specialist Teacher (MaST) Programme, NFER (2013)
• The Employment Equation: Why our young people need more maths for today's jobs, Sutton Trust. (2013)
• Financial education in schools, Gillie (2013)
• Schools' use of early entry to GCSE examinations, Ofsted (2013).
• A level reform: Position statement, ACME (2013)
• ACME's response to the consultation on the draft programmes of study for the National Curriculum, ACME (2013)
• The mathematics skills of school children: How does England compare to the high performing East Asian jurisdictions?, Institute of Education (2013)
• Towards universal participation in post-16 mathematics: lessons from high-performing countries, Nuffield Foundation (2013)
In Press/submitted


Baldwin, C & Lee, S (in press) Exploring the new AS and A levels in Mathematics and Further Mathematics, The Institute of Mathematics and Its Applications (IMA) Mathematics TODAY,

2017


2016


Lee, S, Murphy, B & Stripp, C (2016) Professional development of mathematics teachers: addressing the challenges of sustainability and scalability
13th International Congress on Mathematical Education. Hamburg, Germany.


Baldwin, C, de Pomerai, S & Smith, C (2016) The participation of girls in further mathematics The Institute of Mathematics and Its Applications (IMA) Mathematics TODAY.


2015


2014


Lee, S & Peters, M (2014) Supporting Engineering students at the start of their university course: an industry-university collaboration to provide tailored online mathematics resources. Proceedings of the Annual SEFI Conference


Lee, S (2014) From the physical classroom to the online classroom – providing tuition, revision and professional development in 16-19 education Proceedings of British Congress on Mathematics Education.


2013

Lee, S, Tripconey, S & de Pomerai, S (2013) Extended teacher professional development courses - feedback on the impact of undertaking MEI’s Teaching Advanced Mathematics (TAM) and Teaching Further Mathematics (TFM) courses.


Button, T (2013) *Further pure mathematics with technology: Developing a new A-Level mathematics unit that uses technology in the teaching, the learning, and the assessment* Mathematics Teaching (235), Association of Teachers of Mathematics.


2012


Dudzic, S (2012) *Thank you for Choosing to Travel with us* Mathematics in School, Mathematical Association. Vol. 41 Issue 5 (Print only)


Dudzic, S (2012) *Would you like to take a later flight?* Mathematics in School, Mathematical Association. Vol. 41 Issue 3 (Print only)
2011


Murphy, B (2011) *In-Service Professional Development for Teachers of Pre-University Mathematics*. In International Approaches to Professional Development for Mathematics Teachers (Book), Chapter 7, pages 108-116.


Button, T & Lissaman, R, (2011) *Using live online tutoring to provide access to higher level Mathematics for pre-university students*. Proceedings of The 10th International Conference on Technology in Mathematics Teaching, University of Portsmouth 5-8th July 2011 , pg 94.