The Joint Mathematical Council of the United Kingdom

A Charitable Incorporated Organisation
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Registered Office: De Morgan House, 57-58 Russell Square, London, WC1B 4HS

Minutes of the hybrid General Meeting held at the Council for Voluntary Organisations at 11.00 am on Thursday 8 June 2023

Present

Officers

Chair	Andy Noyes
Deputy Chair	Noel-Ann Bradshaw
Secretary	Chris Chipperton
Treasurer	Jennie Golding

Unattached Trustees

Elected Trustee	Tom Roper

Representatives of Participating Bodies

Adults Learning Mathematics	Beth Kelly
Association of Mathematics Education Teachers	Fiona Curtis
Association of Teachers of Mathematics	Helen Madeley
British Society for Research into Learning Mathematics	Alf Coles
British Society for the History of Mathematics	June Barrow-Green
Edinburgh Mathematical Society	Andrew Wilson
Heads of Departments of Mathematical Sciences	Jan van den Heuvel
Institute of Mathematics and its Applications	Paul Glaister
London Mathematical Society	Kevin Houston
The Mathematical Association	Ems Lord
Mathematics in Education and Industry	Vanessa Pittard (deputy)
National Association for Numeracy and Mathematics in Colleges	Graham Griffiths
National Association of Mathematics Advisors	Ruth Trundley
National Numeracy	-
NRICH	Ems Lord
Operational Research Society	Fay Moore
Royal Academy of Engineering	Shaun Holmes (deputy)
Royal Statistical Society	Zoe Nye
Scottish Mathematical Council	Alan Walker
STEM Learning	Steve Lyon
United Kingdom Mathematics Trust	Dianne Flatt
Wales Institute of Mathematical and Computational Sciences	Sofya Lyakhova

Co-opted Members

UK Representative to the International Commission on Mathematical Instruction	Paul Glaister
Social Media Lead	Richard Perring

Representatives of Observing Bodies

Department for Education [England]	Alex Smith
Department of Education [Northern Ireland]	Julie Harris
Education Scotland	-
National Centre for Excellence in the Teaching of Mathematics	Sue Madgwick
Office for Standards in Education	-
The Office of Qualifications and Examinations Regulation	Sarah Old
The Royal Society	Catherine Boulton

The Royal Society Advisory Committee on Mathematics Education	Anthony Tomei
Scottish Qualifications Authority	Sue Pope
Welsh Government Education Department	Lian Crierie

Others in attendance

Proto-Academy for the Mathematical Sciences	Lynne McClure
University of Edinburgh	Judy Robertson
University of Edinburgh	Holly Linklater
Welsh Government Education Department	Jane Pittard
University of London Institute of Education	Jeremy Hodgen

1 Introduction

1.1 **Welcome** The Chair

1.2 **Practical Arrangements** The Secretary went through the practical arrangements for the day including fire evacuation.

1.3 **Apologies for absence** Apologies for absence were received from:
Charlie Stripp (MEI) – deputy, Vanessa Pittard; Paul Milner (National Numeracy);
Juliet Upton (RAEng) – deputy, Shaun Holmes; John Neeson (Education Scotland);
Hannah Stoten (Ofsted); Sarah Old (Ofqual)

New members and deputies were welcomed to the meeting.

2 Minutes of the meeting held on 23 February 2023

2.1 **Approval of the minutes of the meeting on Thursday 23 February** The minutes were approved.

2.2 **Matters arising not elsewhere on the agenda**

3.1 Although no Ofsted representative was able to attend the meeting, the Chair reported that he believed the publication of the subject report for mathematics was imminent. There would be some JMC activity at that time.

5.8 The matter of ITT recruitment had not been included on the agenda. However, Fiona Curtis reported that she had made some enquiries following the February meeting. This had given a very mixed picture with some institutions up in numbers and others significantly down. Paul Glaister said that he understood the DfE to be undertaking a major review of teacher supply.

9. Following his presentation at the February meeting, John Neeson had produced an update on NRIM which had been circulated.

3 Reports from Trustees

3.1 **Chair** The Chair's report was noted.

3.3 **Secretary** The secretary reported on progress with appointing BCME10 officers.

3.4 **Treasurer** The Treasurer's report was noted.

4 Elections

4.1 **Treasurer** Dr Fiona Curtis was elected unopposed to serve as Treasurer from the end of the AGM on 9 November 2023 until the end of the November 2026 AGM.

4.2 **Elected and Co-opted Trustees** The item was noted.

4.3 **JMC Chair** The item was noted.

4.4 **Deputy Chair** The Secretary reported that it had been overlooked that the Deputy Chair's term of office is due to end in November at the end of the AGM. The current Deputy Chair is eligible to stand again and is willing to do so. It was agreed that the Secretary would put out a call for nominations following the meeting with a deadline for nominations at the end of July. An election, if necessary, will take place at the November AGM.

5 Reports from Committees

5.1 **BCME** Covered in item 3.3.

5.2 **ICMI** The report was noted.

5.3 **MMSA** The report was noted.

The Chair reflected that each of the individual reports from MMSA organisations had commented on the '5 into 1' developments and that these seemed to be positive. The clear majority of voting members from each organisation were in favour, but there was a significant group that were against the move being concerned about the loss of the distinctive identities of their associations. There is ongoing work to try and allay these concerns. It was noted that ATM's total vote was low and this needs addressing in future.

It was confirmed that all five of the organisations need to be in favour of the move in order for it to happen next year.

It was clarified that conference attendance was 270 – 230 residential delegated and 40-day delegates across both of the days.

6 Updates

6.1 Mathematics Education and Digital Technology Working Group

The Chair reminded Council of the background to the establishment of the working group on Mathematics Education and Digital Technology which had led to the draft report which had been circulated for the meeting. Comments were requested by Friday 16 June. Once complete, the report will be signed off by the trustees.

The draft report was welcomed by Council and there was widespread agreement with its contents. Immediate feedback included:

- An agreement with the comments on large data sets which reflected what ALCAB had wanted.
- There wasn't a single intended audience, but it is hoped that it would help open up discussions with the DfE.
- The report is timely given the work on the Mathematical Futures Programme.
- There would be an opportunity to link to sustainability e.g., big data sets relating to climate.
- The topic is important for individuals' skills for the future. There is a widening gap between school content and what is required by industry, universities and life generally. It is depressing that school education is going backwards in this area. There is a question about equitability of access (to equipment) for all. The role of assessment is key.
- There should be an opportunity for using good open data sets
- Concrete suggestions might assist on the report making a difference.

6.2 Proto-Academy for the Mathematical Sciences

Lynne McClure updated Council on the developments taking place with the proto-Academy. There have been four online consultation events taking place with a closing date of 30 June. Good representation was being seen from all groups. The name for the Academy was still fluid and educationalists were not keen on Mathematical Sciences, preferring Mathematics.

A fundamental idea behind an Academy is the ability for the mathematics community to speak with one voice.

There are four key areas of intended impact: advocacy; support for the people pipeline (including teachers); building support for research that doesn't have an immediate purpose; widening the EDI scope. Early career is regarded as very important. There is one paid Executive Director in post.

There are a number of workstreams. One of which is for education whose remit is best thought of as a matrix. The education workstream has met four times and four priorities requiring research have been identified. Recruitment to university mathematics courses is regarded as an important issue. The demand for A/A* by some universities is leading to a difficulty in recruitment to institutions outside the top 30.

Fellowship remains a big discussion point and there is needed for clarity on what fellowship looks like to education professionals.

For governance purposes, the proto-Academy has been set up as a Charitable Incorporated Organisation (CIO) with a single object.

Working closely with bodies such as JMC and ACME is regarded as critical. The Academy is not looking to be a replacement. Further discussion will take place 'down the road'.

(The presentation slides have been circulated to Council.)

6.3 **Mathematical Futures Programme**

The Mathematical Futures Programme is an ambitious project running under the auspices of RS ACME. It is considering what the mathematical education should look like in 20 years, what competence will be needed and how the education system (including curriculum, assessment, pedagogy, technology, teaching workforce) needs to change to meet the needs of all.

There has been a call for views and a number of research activities undertaken. These have largely confirmed our thinking about the need for change, rather than suggesting we should retain the status quo.

International horizon scanning has shown a divergence from other jurisdictions. Issues include cross-phase digital technology, enhancing coding, and the question as to where data science fits.

It is recognised that there has been a lot of change over the last 40 years some of which has been 'sticking plaster'. A longer-term cross-party strategy is needed.

The key theme centres around the question of, what maths do all students need – what is the moral obligation so that school and college leavers can thrive in a data-rich and technologically changing world? Thought needs to be given as to what do they all go on to do as well as to what do some go on to do (e.g., those who become maths specialists and /or academic mathematicians).

The PM's interest in mathematics for all to 18 has been useful. The RS has given evidence to the 'Expert Advisory Group' convened to report to the Secretary of State and the PM in July.

It is intended for RS ACME's headline thinking to be published at the end of the summer or early in the autumn which is earlier than initially planned. This will be followed by a series of consultation events with stakeholders in the autumn ahead of publication of the full report in 2024.

6.4 **Maths to 18**

Jeremy Hodgen informed Council that following the PM's announcement in January 2023, an Expert Advisory Group had been established in April and is due to report to the PM at the end of July. He is a member.

Jeremy said that he was happy to receive submissions from individuals and/or organisations to pass on to the group, noting the tight timeline for the group's work.

7 Reports from Participating Bodies

The reports were noted.

8 Reports from Observing Bodies

The reports from Education Scotland and NCETM were noted.

Other reports were received orally. In line with Council practice minutes of these were not recorded.

It was noted that there was an interest in having an update from the DfE on the Multiply project. **Action: Chair; Secretary**

9 Curriculum Developments in Wales

Council was joined by Andrew Shipway (Qualifications Wales) who gave a presentation on curriculum developments in Wales.

The developments followed the Donaldson review in 2014 and then the Successful Futures report in 2015 which gave 68 findings.

Pursuing 4 purposes, there were 6 areas of learning and experience: Expressive Arts; Health and Well-being; Humanities; Language, Literature and Communication; Mathematics and Numeracy; Science and Technology.

The 4 statements relating to mathematics and these have been further developed into descriptions of learning. There are 5 mathematical proficiencies: conceptual understanding; fluency; logical reasoning; strategic competence; communication with symbols.

It is recognised that the pace and progression of individuals may vary.

Three qualifications are being focused on:

- GCSE Mathematics and Numeracy
  - 240 GLH leading to a double award
  - Tiered
  - Assessment is linked to proficiencies
  - Genuinely integrated qualification
  - 100% exam
  - Unitised structure (resits could just be failed units)
  - Context based
  - Calculator and non-calculator questions
- L1 Number, Measure and Data
  - Focus on developing confidence
  - Test when ready (on screen, on demand)
  - Co-teachable with GCSE
  - 60-80 GLH (less if taught with GCSE)
  - 3 focus areas for assessment – number, measure and data
  - Mixture of calculator and non-calculator questions
  - Pass or fail
  - Resits
- L2 Additional Mathematics
  - Stretch and challenge; deepen and extend understanding and appreciation of mathematics
  - Flexible unit based
  - Unit certification – pass, merit, distinction
  - 3 units gives a full qualification
  - Units: Algebra; Calculus; Co-ordinate geometry and trigonometry; Statistics; Mechanics; Discrete and decision mathematics
  - Each unit is assessed by examination
  - 20-30 GLH per unit

10 Discussion: Data Literacy and Data Science

Council was joined by Judy Robertson, Holly Linklater (both University of Edinburgh) and Vanessa Pittard (MEI).

Jennie Golding introduced the theme and welcomed the presenters.

Following the presentations, Council split into six groups to discuss:

1. *What data literacy/data science should be embedded in the school and post-school curriculum (in primary school, aged 11-16, aged 16-18, at university)? (and what approaches would support students' abilities to make context-based decisions with data, at different stages of education?)*
2. *What are realistic and emerging expectations for students' digital access and skills, in order that they might engage with realistic data in authentic ways?*
3. *In the school curriculum:*

a. *How should we/can we introduce key ideas such as machine learning and artificial intelligence?*
b. *Should data literacy and/or data science be taught separately or integrated into existing subjects? In particular, how should such education relate to the mathematics curriculum, at different stages of education?*

4. *Is there work that JMC should be doing in this area, and if so, what?*

The responses from each group were recorded by a 'scribe' and these are to be sent to the Secretary for collation. The trustees will use this in their September meeting to consider possible ways to take this forward.

However, some rapid responses were taken in answer to i) Give one interesting aspect of the discussion, and ii) What one thing could JMC do?

- One interesting aspect of the discussion

    - The understanding of data literacy: Where and how does it develop? How early can it be embedded? Is it just the responsibility of mathematics?
    - The role of data science in science education is adding to the attractiveness of mathematics education. There is the opportunity to link to other things taking place such as RSPB Week. Opportunities to tap into what exists should be taken.
    - There is a link to cross-curricula learning. Personal engagement is likely to benefit. Is there an opportunity to develop RSS held data into resources?
    - Understanding data literacy against data science. Starting from the problem is liked. Mathematics and other subjects should be involved.
- What one thing could JMC do?
    - Look into whether it is true that primary schools have the ability to do cross-curricula work
    - There are numerous different projects taking place. Could JMC collate? Could JMC signpost the available resources?
    - Develop a position paper.
    - Develop something in conjunction with the Digital technology WG report.

11 Conclusion

The Chair noted that this was the last meeting for Jan van den Heuvel (HoDoMS), Graham Griffiths (NANAMIC) and Steve Lyon (STEM Learning) and thanked them for their involvement in, and contributions to, Council over a number of years.

The Chair thanked everyone present for their contributions during the day and closed the meeting.

14 Dates of future meetings

- Thursday 9 November 2023 – De Morgan House, Russell Square, WC1B 4HS
  (Deadline for papers: Thursday 26 October 2023)