

JMC**Joint Mathematical Council
of the United Kingdom****Minutes of the JMC Council meeting
held at the Royal Statistical Society
on Tuesday 28 February 2012**

The JMC is grateful for the financial support of the Royal Society

Present*Officers*

Duncan Lawson	Chair
Gerald Goodall	Honorary Secretary
Paul Harris	Honorary Treasurer

Executive Secretary

David Martin	Executive Secretary
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Members

Jenni Back	Association of Mathematics Education Teachers
Peter Lacey	Association of Teachers of Mathematics
John Monaghan	British Society for Research into Learning Mathematics
June Barrow-Green	British Society for the History of Mathematics
---	Conference of Heads of Departments of Mathematical Sciences
Colin Campbell	Edinburgh Mathematical Society
Nigel Steele	Institute of Mathematics and its Applications
Tony Gardiner	London Mathematical Society
Alison Clark-Wilson	Mathematical Association
---	Mathematics in Education and Industry
Sally Barton	National Association for Numeracy and Mathematics in Colleges
Lynn Churchman	National Association of Mathematics Advisors
Steve Hewson	NRICH representing the Millennium Mathematics Project
Lydia Showan	National STEM Centre
Louise Orpin	Operational Research Society
Roeland Beerten	Royal Statistical Society
Alison Braddock	Wales Institute of Mathematical and Computational Sciences

Co-opted members

Ros Sutherland JMC International Representative
--- International Commission on Mathematical Instruction

Observers

Roger Porkess Advisory Committee on Mathematics Education
Jeff Evans Adults Learning Mathematics
--- Department for Education
--- Department for Education and Skills [Wales]
Nick Todd Department of Education [Northern Ireland]
--- Education Scotland
Mary McAlinden Higher Education Academy
--- The Higher Education Academy Mathematics, Statistics and OR Network
Jane Imrie National Centre for Excellence in the Teaching of Mathematics
Jane Jones Office for Standards in Education
Darren Ellis Office of Qualifications and Examinations Regulation
Rosalind Mist Royal Society / ACME Head of Secretariat
Paul Scruton School Mathematics Project
John Harris Sector Skills Council for science, engineering and manufacturing
technologies in the UK
James O'Donoghue Training and Development Agency for Schools
Bill Richardson United Kingdom Mathematics Trust

- 1 Apologies** Dylan Jones (DfES (Wales)), Fiona Robertson (Education Scotland), John Marriott (HEA MSOR Network), David Arrowsmith (HoDoMS), Elizabeth Winstanley (LMS), Charlie Stripp (MEI), Celia Hoyles (NCETM), Lynne McClure (NRICH), Janet Holloway (Ofqual), Angela Mabee (TDA).
- 2 Welcome to new representatives, alternates, guests and visitors**
- New representatives: David Arrowsmith (HoDoMS, but apology for absence for this meeting), Alison Braddock (WIMCS). Also Rosalind Mist in the capacity as representative of the RS.
- Representatives of newly admitted organisations: Fiona Robertson (Education Scotland, but apology for absence for this meeting), Mary McAlinden (Higher Education Academy).
- Alternates: Roger Porkess (ACME), Tony Gardiner (LMS), Jane Imrie (NCETM), Steve Hewson (NRICH), Darren Ellis (Ofqual), James O'Donoghue (TDA).

Guests: Stephen Sparks (Chair of ACME), Rhys Morgan (RAEng).

Margaret Brown, Geoff Wain, John Bibby, Alexandra Fitzsimmons and Sara Santos were also welcomed for the afternoon discussion item on the Mathematics Museum Project; and Stefano Pozzi and Caitriona Byrne for the afternoon discussion item on the National Curriculum Review.

- 3 Appreciation of departing representatives**
- Duncan Lawson reported that Elizabeth Winstanley (apology for absence today due to being on business abroad) would no longer be the LMS representative after the end of the current month. Elizabeth had served for many years on JMC and on the Executive Committee. Council expressed its deep appreciation of her work and concurred that an official letter of thanks be sent to her. [**Post-meeting note.** The letter was sent on 2 March 2012.]
- 4 Minutes of the meeting of Tuesday 8 November 2011**
- Paper JMC-2011-Nov-Minutes*
- Accepted.
- 5 Consideration of any matters arising from the Minutes that do not appear on the main agenda**
1. Royal Statistical Society Centre for Statistical Education (arising from discussion at the JMC AGM also held on 8 November 2011).
Gerald Goodall reported that RSSCSE had decided not to pursue membership of JMC.
 2. Minute 18, paragraph 4 [Report of the Digital Technologies Working Group].
Duncan Lawson reported that he had sent copies of the report to the ministers who chair the STEM Ministerial Advisory Group and had had a formal response from David Willetts. He further reported that the next meeting of the Group would be in March.
- 6 Reports from JMC Executive**
- i. Chair**
- (1) Duncan Lawson reported that the Council for Subject Associations (CfSA) had written to JMC to invite JMC to renew its membership. He summarised the recent history of the case, where JMC had initially been a member of CfSA but had then decided not to renew its membership. Correspondence had been entered into and a presentation from CfSA was organised, but JMC remained unpersuaded that it should re-join. One reason was the expense, but more importantly it did not appear that there was any direct representation of subject disciplines at CfSA Board level. JMC Executive had reviewed the situation but felt that there was no positive reason to alter the previous decision. This was put to Council as a **recommendation** and was **approved**.
Tony Gardiner enquired as to what bodies were still members of CfSA. It was thought that there was no specifically mathematical body in membership. [**Post-meeting note added by Hon Secretary.** This would

appear to be confirmed by perusal of the list of members shown on the CfSA website: follow links under Membership from <http://www.subjectassociation.org.uk/index.php?page=1>.]

Peter Lacey commented that it was good for education professionals to join subject associations and this was readily agreed, but still did not imply that membership of CfSA need be pursued.

- (2) Duncan Lawson reported that there was on-going correspondence between JMC and LMS.

ii. Secretary

Gerald Goodall reported that the revised JMC Constitution, as agreed at the November 2011 AGM, had received the necessary ratification as required under the previous Constitution. The revised Constitution was therefore now fully in effect.

iii. Treasurer

Paul Harris reported as follows.

- (1) Nearly all subscriptions for the current year had been received. The remaining organisations had been or were being approached.
- (2) The ACME grant towards support of the Executive Secretary had been received.
- (3) The Royal Society grant ended with the present meeting.
- (4) JMC was temporarily holding some money from the IMA intended for ICME 2012 bursaries.

iv. Chair of Nominations Committee

Nothing to report.

7 **Proposal for amendment of JMC Regulations**

Paper JMC-2012-Feb-Regulations

Gerald Goodall explained that it was proposed to delete the current Regulations 1 and 2 which had become essentially redundant following decisions made at the AGM held on 8 November 2011. It was further proposed to renumber the current Regulation 3 as Regulation 1. Full details were in the paper.

The proposal was **accepted** with one vote against.

8 **JMC International Representative**

Ros Sutherland reported that IMA and LMS had already responded to the letter circulated to JMC organisations regarding sponsorship to fund bursaries for attending ICME 12 (in South Korea, 8 to 15 July 2012). Bursaries of up to

£600 were being offered, the same as for ICME 11. An advertisement was near to being finalised and would be distributed widely. Nevertheless, it was thought that UK representation at ICME 12 might be rather few in numbers, and it was hoped that this could be retrieved for the next ICME in 2016. Duncan Lawson commented that the UK Representative to ICMI seemed the appropriate person to lead the necessary activity towards this, obviously with support, perhaps by forming a small sub-group. Sally Barton added that JMC had a useful role in enabling information to be sent easily to organisations for further dissemination.

- 9 UK Representative to ICMI** It was reported that Paul Andrews had had to stand down for personal reasons, but was continuing to forward notices and other general information by email to JMC for further distribution.
- 10 BCME 8 (to be held in 2014)** Bill Richardson reported that a meeting had recently been held in Derby and matters were proceeding. He confirmed that the dates would be 14–17 April 2014 and, although contracts had not yet been exchanged, the venue would definitely be the East Midlands Conference Centre. Unfortunately, Paul Andrews had likewise had to stand down as Programme Chair.
- 11 Report from Primary Working Group** Lynn Churchman reported that considerable electronic discussion had taken place and that a small amount of funding from JMC had enabled physical meetings to be planned for April and May.
- It was hoped to present a draft report to JMC at its June meeting.
- 12 Reports received from JMC Organisations**
- i. Teacher Education**
- Paper JMC-2012-Feb-AMET*
- Jenni Back introduced the paper. A lengthy discussion ensued, particularly over the issue of admitting students with First or Upper Second degrees in subjects unrelated to mathematics and whose highest mathematical qualification might be no more than GCSE. (See also Minute 17.) While this might have been an unintended consequence of the setting up of the bursaries, there was much concern about its ramifications. James O'Donoghue agreed that this needed to be raised within the TDA.
- It was **resolved** unanimously that JMC should respond to the current consultation on bursaries to the effect that, for mathematics PGCE candidates, they should be offered only to people with mathematics or strongly mathematical degrees. David Martin was asked to write this response.
- Jenni Back also reported that AMET had been approached by DfE in respect of scoping a study on subject-specific pedagogy in teacher training. She asked everyone interested to contact her directly.

ii. Mathematics in Education and Industry

Paper JMC-2012-Feb-MEI

In the absence (in hospital) of Charlie Stripp, this paper was noted.

iii. London Mathematical Society

Paper JMC-2012-Feb-LMS

Tony Gardiner introduced the paper. He commented that, although LMS strongly wished to work with schools, it was often difficult to reach them. Ros Sutherland added that it was often difficult for schools to know in general what was going on at a local level. This was echoed by many representatives. Jane Imrie remarked that FMSP Area Coordinators should be a good channel of communication. Nick Todd warned about a sadly widespread lack of real subject enthusiasm among many teachers in modern times.

Several representatives expressed willingness to circulate LMS material through their own organisations' networks.

Colin Campbell stated that it had been interesting to compare the activities of LMS, as set out in the paper, with those of EMS.

iv. Wales Institute of Mathematical and Computational Sciences

Paper JMC-2012-Feb-WIMCS

This was welcomed as a very informative and helpful paper on the work of WIMCS.

13 Report from ACME *Paper JMC-2012-Feb-ACME*

Roger Porkess elaborated on some points in the report, especially the Open Call for new members of ACME which was about to be sent out. He also drew attention to a small conference on good practice in primary schools to be held on 5 March, and to the ACME Annual Conference to be held on 10 July.

He reported that ACME had been much engaged in post-16 work, especially the aspiration that very many more students would be studying some mathematics post-16. There would be a paper setting out options for achieving this. Focus Groups to discuss aspects of the draft would be welcome.

Lynn Churchman enquired about the evaluation of the GCSE Linked Pair pilot. Rosalind Mist indicated that ACME had been assured by officials that the original aims of the pilot would continue to feature in the evaluation; ACME would certainly be pursuing this.

Tony Gardiner commented on the difficult situation regarding early entry for

GCSE Mathematics, wondering whether anything would actually be done to prevent this. This concern was reinforced by Ros Sutherland and others. Rosalind Mist commented that the Expert Panel for the National Curriculum Review might well have something to say on the issue. Roger Porkess thought that ACME had done as much as it could; the matter now awaited a political decision.

14 Report from NCETM

Jane Imrie reported that a Tribal-led consortium was in contract negotiations with the DfE, which were expected to conclude soon, for a new programme that would focus on supporting those who support teachers, in particular teaching schools and other key improvement agents. A central part of the programme would be to develop lead people in these organisations to enable them to lead CPD. The NCETM CPD Standard would remain an important part of the programme as would work with CPD providers more generally. The portal would also still be available. NCETM understood from officials that the Minister was excited about having NCETM support government policies in enabling all teachers, but especially teachers of mathematics in primary schools, develop mathematical proficiency.

15 Update on current developments

i. Northern Ireland

Paper JMC-2012-Feb-NI

The paper was received.

ii. Ofsted

Paper JMC-2012-Feb-Ofsted

Jane Jones introduced the paper. She stated that the date for publication of the next triennial report was now expected to be May. She also reported that meetings would be taking place next week concerning the new ITE inspection framework. Queries were raised about the position of the curriculum in the new system.

iii. TDA

Paper JMC-2012-Feb-TDA

The paper was received. James O'Donoghue emphasised that TDA was keen to work with organisations.

16 Reports from meetings

OCR Mathematics Consultative Forum

David Martin had attended the second meeting of this Forum, held on 12 October 2011, to represent JMC and had circulated a report.

[**Secretarial note.** The next meeting of the Forum will be on 15 March 2012 and David Martin will again be attending.]

**17 Mathematics
Teacher Training
Scholarships**

Paper: *JMC-2012-Feb-Scholarships*

David Martin introduced this item, explaining that DfE wished to extend the IoP (Institute of Physics) Teacher Training Scholarships (£20,000 with support for each person – see information available on the IoP website at http://www.iop.org/education/teach/itts/page_52632.html) to teachers of other subjects such as mathematics and chemistry, and was seeking a home for the mathematics development of this within the mathematics community. He wondered whether some JMC organisations might be interested in being involved. He pointed out that, though money was available for the scholarships, no money was currently available for administering them.

Members sought clarification of the scheme. It appeared that the scheme would start with 2013 entrants, and would not cover new bursaries but was for the existing bursaries administered partly through the community. More specifically, for 2013 entrants, instead of there being a simple bursary of £15,000 for those with an Upper Second degree and £20,000 for those with a First, the higher amount of £20,000 could be available as a Scholarship to entrants selected by the community. This would include support such as mentoring, networking with others and membership of subject organisations.

How such Scholarships might be organised by the community was not obvious. Ros Sutherland commented on the danger of fragmentation due to there being several organisations within the mathematics community, and also suggested that HE was the right place for such selection decisions to be made. Peter Lacey commented that something in the nature of the CMATHTEACH model, where the IMA in effect led on behalf of the community, might be sensible.

Duncan Lawson summarised general discussion to the effect that there was clearly interest in a full clarification of proposals and that there might well be merit in a scheme of some kind. David Martin offered to seek expressions of interest and to convene a meeting of the interested parties with the hope of taking this forward. [**Post-meeting note.** This meeting was convened for 29 March 2012.]

**18 Morning discussion
item**

**Report for the Royal Statistical Society:
"The future of statistics in our schools and colleges"**

Paper:

JMC-2012-Feb-RSS-report_executive_summary_and_recommendations

[Paper copies of the full report were circulated at the meeting.]

Roger Porkess gave a brief general introduction to his report. He emphasised how important statistics had become for the whole of everyday, personal, professional and general working life. The report included a study of

syllabuses for statistics content, over all ages and all subjects, in schools and colleges, and it proceeded to policy recommendations based on this evidence.

He described the "statistics cycle" introduced in the report: Problem Analysis – Data Collection – Data Presentation – Data Analysis (similar to, but not the same as, the Data Handling Cycle of the National Curriculum for Mathematics). He contrasted the merits of this with what actually happened in schools and colleges. Good primary schools covered most of it well through cross-curricular work as a natural way of proceeding, but GCSE Mathematics consisted, in practice, almost solely of Data Presentation. AS/A-level Mathematics was little better, also treating Data Analysis but hardly touching on Problem Analysis or Data Collection. This mattered, because good design of investigations and collection of data were vital for securing good evidence for making decisions. In contrast to Mathematics, some other subjects, notably Geography, Psychology and Biology, covered the whole cycle in AS/A-level work.

The best location of statistics had been a matter of controversy in recent years. It was Roger's clear conclusion that it should be part of the mathematics curriculum and that Mathematics Departments should see themselves as centres of excellence and providers of guidance for the whole school or college. This brought responsibilities for better understanding of the needs of other subjects and ensuring proper sequencing of material. There were also important issues about the appropriate statistical content of syllabuses, the relationship with ICT and with the development of assessment instruments that were more fit for the purpose of assessing statistical skills. It was also important that the needs of mathematics and statistics were represented separately, but alongside each other, in important policy discussions.

A lively discussion ensued in which many points were made.

Jeff Evans commented that there was a need to remember that "statistics" could mean both "statistical data" and "statistical methods of analysis"; the proper use of statistical data in other subjects often required the critical analysis of (secondary) data sources like official statistics. Tony Gardiner commented that a better understanding of other subjects might be sensibly matched by the other subjects having a better understanding of sensible progression within mathematics; it was acknowledged that reciprocity was of course important. Steve Hewson remarked on a mismatch between understanding the mathematics of a statistical technique and understanding the subtlety of when it should be used – the latter being properly a matter for user subjects. Stephen Sparks responded that it was reasonable to expect students to be motivated towards the mathematical work by meeting problems in user subjects. Sally Barton recounted how students at her college had frequently commented, *post hoc*, on how useful statistics had turned out to be for them, even though they had not initially welcomed being required to take it. This led her to feel that the statistics work within mathematics was in fact the most useful part of broadening for post-16 students, and to wonder how this might be brought about.

Roger Porkess invited further debate by email correspondence.

- 19 Any other business** None.
- 20 Dates of future meetings** All future meetings will be at the Royal Statistical Society, unless and until there is an announcement to the contrary.
- Tuesday 12 June 2012
Tuesday 6 November 2012 (immediately following the JMC AGM)
Tuesday 26 February 2013
- [**Note.** The June 2012 meeting is one week later than normal to avoid the public holiday that has been called to celebrate the Queen's Diamond Jubilee.]

DISCUSSION ITEMS

Discussion led by Margaret Brown, Geoff Wain and colleagues on the Mathematics Museum Project

Papers: *JMC-2012-Feb-Mathematics_Museum_vision*
JMC-2012-Feb-Mathematics_Museum_draft_website_text

The presenters explained that the ideas for this project, for which the working title was MathsWorldUK, had been launched at Kings College London on 26 January 2012. The aim was an interactive outreach concept, both electronic and physical, which would be directed at public understanding of mathematics and thus become a forum for mathematics to present its case to the public. Collaboration with the Science Museum was a possibility; a useful meeting had been held on the same morning as the JMC meeting.

Money needed to be raised. The aim was £50 million, to enable creation of a building with "theme zones" as a showcase for mathematics to engage with the general public. In the meantime, the organisational structure had been essentially completed. It was hoped that JMC organisations would want to get involved, help spread the word, distribute leaflets at conferences, help identify potential donors and also seek to identify helpers with suitable experience.

General information and contact details were available at <http://mathsworlduk.com/> [note no "www" at the start of this].

Discussion showed general enthusiastic support for the ideas. Stephen Sparks enquired whether social networks and the internet more generally were being used to disseminate news and gather support; the reply was that this was indeed being looked into. Peter Lacey asked if JMC might send a letter of support on behalf of all its Participating Societies, including a list of them. It was agreed that JMC Executive would draft a possible text to be discussed by Participating Societies and, if agreed, formalised at the next JMC meeting.

Discussion led by Stefano Pozzi on the National Curriculum Review

Slides for PowerPoint presentation: *JMC-2012-Feb-National_Curriculum_discussion*

Stefano Pozzi worked through the PowerPoint presentation in detail, setting out where the work had reached, what the next stages would be and what organisations could do to help. Formal consultations would be towards the end of this year (2012); Programmes of Study would be published in September 2013, with first teaching (for all subjects) in September 2014.

Much material relating to the work of the Expert Panel had been published on 19 December 2011 (see <https://www.education.gov.uk/publications/standard/publicationDetail/Page1/DFE-00135-2011>).

There was a general aim for a more challenging curriculum and for more statutory breadth. It was also now intended that GCSE development should be much closer to overall National Curriculum development. Cognisance also needed to be taken of likely extension of compulsory education in some form post-16.

Members were grateful for the update. General discussion covered many items. Special attention was given to the fundamental importance of Key Stage 3, to the debate around Levels and to dangers of fragmentation in a year-by-year model.