

May 2014

Inside this issue:

From the Chief Executive (cont.)	2
Curriculum Change	3
Teaching Advanced Mathematics	4
Technology and Mathematics	5
Education & Training	6
Critical Maths	7
Quantitative Methods	8
FMSP Update	9-10

From the Chief Executive

- ▶ Change of role for Richard Lissaman, and congratulations to Kevin Lord
- ▶ An exciting opportunity!
- ▶ Update on new A levels in Mathematics and Further Mathematics
- ▶ MEI conference – University of Keele, 26 – 28 June

Change of role for Richard Lissaman, and congratulations to Kevin Lord

After 3 years as Further Mathematics Support Programme Leader and 14 years working on the project from its inception in 2000, Richard is changing his role within MEI to focus on developing MEI's online materials to support the teaching and learning of mathematics.



Richard requested the change (as he explains in his article on page 10) and his strong interest and

expertise in learning technology for mathematics mean that it is an exciting opportunity for MEI. He will continue to lead the FMSP's work in relation to support for the STEP, AEA and MAT examinations.



Let maths take you further

Richard has done a brilliant job as FMSP Leader and his work for the programme from the very start has been a very significant factor in its success. He will be a very difficult act to follow.

That challenge falls to Kevin Lord who, after a competitive selection process involving both internal and external candidates, has been appointed as the new FMSP Leader.



Kevin has been a member of the FMSP's Central Team for two years. He takes over from Richard from 1 September.

An exciting opportunity!

If you are interested in the use of ICT in mathematics teaching at AS/A level, whatever your level of expertise, please see Tom Button's article on page 5 to find out how

to get involved in an exciting new project.

MEI
Innovators in
Mathematics
Education

CASIO

Update on new A levels in Mathematics and Further Mathematics

New content and assessment objectives for AS/A level Mathematics and Further Mathematics, for first teaching from September 2016, will be published for consultation over the summer.

As indicated in our last newsletter, it is anticipated that the new mathematics A levels will have a linear structure, which will mean that the whole A level must be assessed at the end of the course; students who take AS before the end of the course cannot use the marks to contribute to the A level grade.

It is also possible that the whole content of A level Mathematics will be prescribed with no options, unlike the current structure where different applied

options can be chosen – see the report on the review of curriculum content from [Ofqual's A level reform information](#).

A linear structure with prescribed content could have some important advantages:

Universities would have greater certainty about what new undergraduates with mathematics A level qualifications have studied, which should help to improve transition for students.

It would encourage a more connected approach to the teaching and learning of mathematics, and this could result in students developing a more coherent understanding of mathematical ideas, rather than 'compartmentalising'

mathematics into separate examination modules, which can hide connections and impede deep understanding.

These advantages need to be weighed against the loss of the flexibility and choice offered by the current modular structure, and the very high stakes nature of the end of course examinations in the linear structure.

It is vital that any new structure continues to allow AS Further Mathematics to be taught alongside AS Mathematics in year 12, and for Further Mathematics to retain as much flexibility as possible, enabling students to choose options that appeal to their interests and will support their aspirations in higher education.

Whatever is finally decided, at MEI we will adhere to our principles, working to develop qualifications, resources and professional development programmes that will help students to learn mathematics in an enjoyable and inspiring way, fostering deep understanding, emphasising the use of mathematics to solve problems in context and nurturing students' ability to comprehend and communicate mathematical arguments clearly.

We will ensure that high quality resources and professional development opportunities are available to prepare teachers for the new specifications.

MEI conference – University of Keele 26 – 28 June



If you haven't yet booked, please hurry, places are filling fast! For the full programme and to book your place, please see the [MEI conference website](#).

My opening welcome session will include the latest news on curriculum developments in mathematics at A level, GCSE and 'Core Maths'.



Charlie Stripp
Chief Executive

[Email Charlie](#)

Curriculum change

We are continuing to update information about curriculum change on the [MEI website](#). Update webinars have taken place – recordings are available on the website.

MEI has recently responded to an Ofqual consultation about awarding bodies endorsement of textbooks and resources (closing date 6 May); the response is available on the [MEI website](#).

There is an [Ofqual consultation](#) about the grading system for the new GCSEs, closing on 30 June, and a [DfE consultation](#) about characteristics of Core Maths qualifications closing on 26 May.



Stella Dudzic
Programme Leader
(Curriculum)

[Email Stella](#)

New National Curriculum: opportunities, practicalities and realities

Due to the large demand for this course, it is now running on two additional dates:

▶ Wednesday
16th July 2014
(KS3 focus)

▶ Wednesday
22nd October 2014
(KS4 focus)

The course has been created to enable mathematics departments and their students to gain the most benefit from the opportunities afforded by the imminent curriculum changes.

The aims of the course are for participants to:

▶ gain clear, accurate and up to date information on the curriculum and assessment developments and challenges

▶ best take advantage of the opportunities to develop their department's teaching and assessment strategies

▶ extend their subject knowledge and pedagogy in areas relevant to the new KS3 and KS4 requirements

▶ benefit from collaborating with others on addressing the practicalities of meeting the new requirements

For further details visit the [MEI website](#) or contact course leader Carol Knights.

The course is also being offered for schools and groups of schools, on a centre-based model. For details on offering the course within your organisation, contact the course leader Debbie Barker.



Carol Knights

[Email Carol](#)



Debbie Barker

[Email Debbie](#)

A new member of MEI's curriculum team

Keith Proffitt started working for MEI as a Curriculum Developer in April. He is part of the Curriculum Team, working mostly on post-16 mathematics curriculum development, resources and CPD.

His previous job was as a Qualifications Manager at OCR, responsible for the MEI A level suite of qualifications.

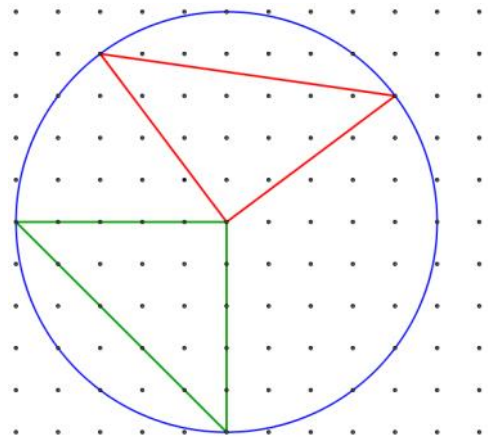
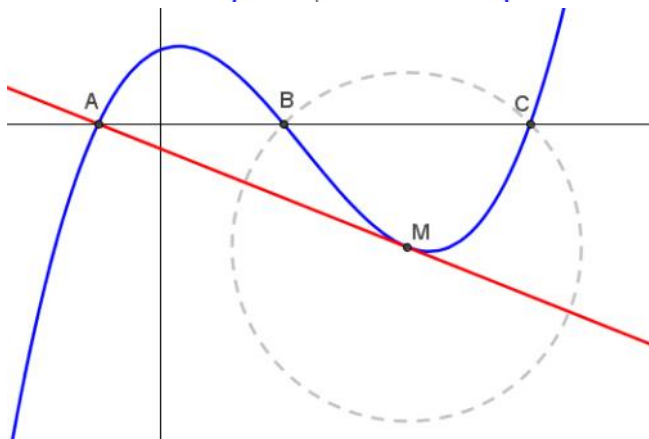
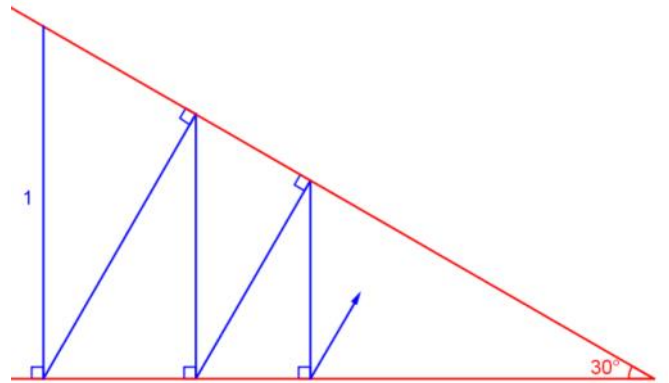
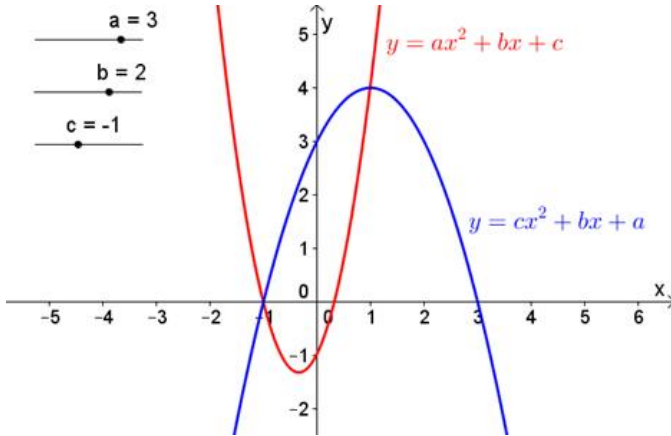
Before that, he was a teacher and head of department in two Cambridgeshire schools, teaching across the full 11-18 age and ability range.



Keith Proffitt

[Email Keith](#)

What are the questions?



For the answers, enrol on the Teaching Advanced Mathematics course

See mei.org.uk/tam for details.



Bernard Murphy
Programme Leader
(CPD)

[Email Bernard](mailto:bernard@mei.org.uk)

Casio/MEI Teacher Networks - an exciting opportunity for A level mathematics teachers

MEI and Casio are developing networks of teachers who want to develop their use of ICT in teaching mathematics at AS/A level, including the use of graphical calculators.

The aim of these networks is to develop a group of teachers who can contribute to the trialling of resources to use the potential of ICT to enhance the teaching and learning of AS/A level Mathematics and Further Mathematics, and who can support teachers in wider

networks to develop the skills needed to use technology effectively in their teaching.

What's on offer?

- ▶ Four days of funded professional development, over 2 years, on using ICT in the teaching and learning of AS/A level Mathematics and Further Mathematics, with a contribution towards travel and cover costs.

- ▶ A loan of a class set of CG-20 colour graphical calculators for the duration of the project.

- ▶ The opportunity to join regular online sessions with experts in using ICT in Mathematics and support on the wider use of technology such as Interactive Whiteboards and tablets.

- ▶ Access to related teaching and learning resources.

For more details about the networks and how to apply see:

mei.org.uk/casio

MEI
Innovators in
Mathematics
Education

CASIO



Tom Button

**MEI Learning
Technology
Specialist**

Email Tom



Have you considered offering FPT to your students for next year? FPT is a new optional A2 Further Mathematics unit that can be studied alongside or after Further Pure 2. In FPT students are expected to have access to a computer and appropriate software for the teaching, learning and assessment.

Further Pure Mathematics with Technology (FPT)

The unit covers three topics, all studied by investigating with technology:

- ▶ Investigations of Curves – extending students of knowledge of curves through investigating with a graph-plotter;

- ▶ Functions of complex variables – considering functions such as the sine of a complex number through using a Computer Algebra System and spreadsheets;

- ▶ Number Theory – an introduction through programming.

Full teaching and learning resources are available on [Integral](#) and are free to schools/colleges registered with the FMSP. During the academic year 2014/15 MEI will be offering professional development on teaching FPT.

For further details about FPT, including specimen/past papers and information about both software and CPD, see: mei.org.uk/fpt



**Tom Button and
Richard Lissaman**

Email Tom

Email Richard

Special MEI conference day for the E&T Sector

At this year's **MEI conference**, for the first time, we are including a day of sessions designed for maths teaching staff from the Education and Training sector. This strand will run on Saturday 28 June.

The four workshop sessions and the plenary have been

selected to be of particular interest to FE and independent training providers.

The cost of attending for this day is only £127, including lunch. Other teachers are also welcome to attend these sessions and there are many other options to choose from - see the **MEI**

conference website for full details. Further information about the conference programme, the venue and accommodation, as well as online registration, is available on the **MEI conference website**.

We look forward to seeing you there!



09:00 - 10:00	Maths in Work Resources
This session will look at examples of real-world applications of GCSE Mathematics and freely available resources that use work-related contexts.	
10:30 – 11:30	Plenary: Technology in Mathematics: The Future and the Present
11:45 - 12:45	GCSE resit the RME way
The Realistic Mathematics Education (RME) approach uses problem-solving with real contexts, which has supported the move from modular to linear specifications by improving knowledge retention. Learners are able to bring their own outside experiences to contribute to lessons.	
13:45 - 14:45	Functional Skills
This session will look at a selection of approaches for teaching Functional Skills at levels 1 and 2. It will include resources which can be taken away to use in the classroom.	
15:15 - 16:15	Embedding employability skills in teaching maths
This workshop will explore the non-academic skills valued by employers; how they can be developed as part of teaching and learning maths; and how this can benefit learning.	



Janice Richards
MEI Programme Leader (Industry)

Email Janice

Critical Maths

Development and trialling of our **DfE-funded curriculum development work** is continuing. We are developing the ideas of Professor Sir Timothy Gowers for what should be taught to students who have not chosen to study mathematics post-16.

An article entitled '**Twenty tips for interpreting scientific claims**' appeared in a recent issue of Nature. In the article, the authors highlight the need for decision makers to understand what constitutes effective evidence. This need is also being recognised by higher education, with greater emphasis on quantitative methods.

Often in mathematics lessons students learn how to gather, process and even analyse data but seldom do they question the validity of data and the process by which it has been gathered, as suggested in the Nature article.

Recently, I have been working on a series of resources in an attempt to do just this.

One such session started by asking the students "do speed cameras reduce road

accidents?" There were a variety of responses to this question including comments like "no, drivers just slow down for the cameras and then speed up after" and "yes, because once they get caught they tend to be more careful." I have found this style of starting with an apparently non-mathematical question, which asks for an opinion, has been successful in promoting discussion and ultimately mathematical reasoning.

I moved the lesson forward by saying that speed cameras had been placed in areas where there had been a lot of accidents in the previous year. After the cameras had been installed, most of the sites saw a reduction in the number of accidents. I asked the students if, given this new evidence, they were any more convinced of the effectiveness of speed cameras.

Further discussion was followed by a **simulation**.

"How is this different from the actual speed cameras?" I asked. After some discussion we decided that the



simulation was totally random, traffic accidents had some factors which could be thought of as random or partially random, whilst other factors were not.

The discussion continued as to how someone could actually measure how much of the reduction could be attributed to the cameras. Many interesting comments came from the students such as, "repeat the experiment in a large number of locations" and "randomly site the cameras". This raised ethical issues about wasting money placing cameras in locations where they were not needed.

By the end of the session we had engaged in very productive discussion and I felt the students left the room with an increased understanding of

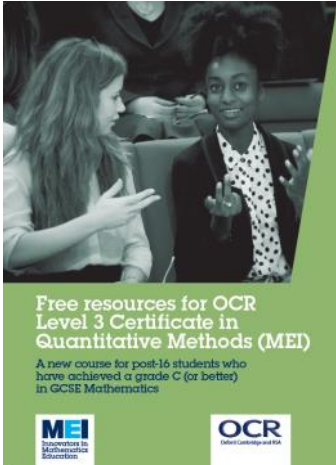
regression to the mean, and the need for randomised controlled trials. We were able to build on this in later sessions.

All of the resources trialled so far for Critical Maths will be made available free of charge via the MEI website later this summer. These will be suitable to support the teaching of the new Core Maths qualifications.



Terry Dawson
Curriculum Developer
[Email Terry](#)

Free resources for the Introduction to Quantitative Methods course now available



The **Introduction to Quantitative Methods unit (IQM)** is designed for students who have at least grade C in GCSE Mathematics and who would benefit from continuing with some mathematics but who do not need or want to do A level Mathematics.

The IQM resources are being written and will be complete by summer 2014. Subscription to the growing number of resources is now available. Thanks to sponsorship from OCR, subscription is free to **centres**.

To subscribe please visit the [IQM resources page](#) and complete the form.

Stella Dudzic

Warwick Q-Step Programme

THE UNIVERSITY OF
WARWICK



A step-change in
quantitative social
science skills

Funded by the
Nuffield Foundation,
ESRC and HEFCE

The University of Warwick is pleased to announce the introduction of two new undergraduate quantitative methods degrees, as a part of the Warwick Q-Step programme. The new degrees, **BA in Sociology and Quantitative Methods** and **BA in Politics, International Studies and Quantitative Methods** are currently recruiting the first cohort of students and will commence in September 2014.

The Q-Step programme is a £22 million initiative funded by the Nuffield Foundation, the Higher Education Council for England (HEFCE) and the Economic and Social Research Council (ESRC). The programme is designed to promote a step change in quantitative social science training and includes the development of a suite of specialist undergraduate degrees that combine the study of social science disciplines with quantitative methods.

Q-Step has been introduced in response to a national shortage of social science graduates with the quantitative skills needed to evaluate evidence, analyse data, and design and commission research - skills that are in high demand from employers across all sectors both in the UK and globally.

The University of Warwick is one of only 15 universities in the UK to be awarded Q-Step funding and is the only one based in the Midlands region.

Further information about the Q-Step programme and the new Warwick degrees can be found using the following links:

[National Q-Step programme](#)

[Q-Step at the University of Warwick](#)

[Course details: BA Sociology and Quantitative Methods](#)

[Course details: BA Politics, International Studies and Quantitative Methods](#)

For queries about the Warwick Q-Step programme, the new quantitative methods degrees or to arrange a school/college liaison visit, please [contact the Warwick Q-Step team](#).



Access to Further Mathematics



In March the FMSP held three residential 'Access to Further Mathematics' events in London, Warwick and Manchester. These two day events are for teachers in schools and colleges that do not currently teach Further Mathematics or who have struggled to recruit sufficient students to make Further Mathematics courses viable.

The events feature speakers from different areas of education: representatives from local universities gave the HE perspective and stressed the importance of Further Mathematics for university applications, whilst undergraduate students gave first-hand accounts of how much having taken Further Mathematics helped them in the transition to university study.

There were also teachers from schools/colleges that have worked with the FMSP to establish Further Mathematics in their own institutions and whose experiences are of great value to those just starting out on the journey to do this in their own establishments.

As well as discussing the reasons why it is important to offer Further Mathematics to students, the teachers



have time to plan collaboratively with FMSP staff and explore the wide variety of support and resources that are available to them through the FMSP. They also do some maths!



Sue de Pomerai
FMSP Deputy
Programme Leader
[Email Sue](#)

FMSP update

The FMSP has enjoyed a very successful 2013-14 and we are now looking forward to working with students and teachers for a further three years, following the new agreement with the Department for Education. The FMSP offer of support is more comprehensive than ever, incorporating support at KS4 as well as for A level Mathematics and Further Mathematics, and with the transition to Higher Education. Participation in the FMSP's programmes of CPD, maths promotion events, live online support and maths competitions is growing very quickly. All of these facilitate improvements to mathematics provision in schools and more student involvement in mathematics, so this bodes well for further increases in student participation in mathematics over the coming years.

I'm delighted to let you know that the FMSP has made several new appointments to the Central Team.

Cont. on next page

Claire Baldwin, Rob Butler and Cath Moore and will be joining the team in full-time roles.



Claire has worked as a curriculum leader for mathematics and science in a sixth form college and as a PGCE course leader for secondary mathematics.



Rob has worked as a mathematics teacher in a school and a sixth form college and has particular experience of online learning.



Cath has worked as a mathematics teacher in schools and colleges and as a National Strategies Consultant and has particular experience of the extension and enrichment of mathematics.



Jo Sibley joins us on part-time secondment from her post as a maths teacher at Poole Grammar School.



Jeff Trim joins us on part-time secondment from his post as a maths teacher at Little Heath School.

Both Jo and Jeff have extensive experience of supporting students and teacher with mathematics through their roles as FMSP Area Coordinators, which they will continue with alongside their Central Team roles.

Andy Tharratt has been appointed by the NCETM and joins the Central Team with a role linking the FMSP to the emerging network of Maths Hubs. Andy has experience as Head of Science, Mathematics, Computing and Social Science at a sixth form college and has

worked extensively organising and delivering Further Mathematics.

Rose Elliott and Kayleigh Birch-Brodie have joined the FMSP Central Administration Team in full-time roles. Rose previously worked within the social work sector, more recently acting as a care coordinator for a local care charity. Kayleigh is a Psychology graduate who previously worked in financial services within the Insurance sector.

We are delighted with all of these appointments. A larger FMSP Central Team means that we can continue to improve our offer of support and focus even more on resources, CPD, maths promotion (including encouraging more girls to take A/AS level Mathematics and Further Mathematics) and transition to HE. Support from Higher Education to encourage sixth formers to take A/AS level Further Mathematics is crucial to ensuring that growth in participation and to encourage those schools still not offering Further Mathematics to engage with the FMSP to do so. The involvement of the

Institute of Education in the FMSP provides opportunities for trainee teachers to engage more with A/AS level Mathematics.

On a personal note, I am changing role within MEI to lead online resources development. I requested the change, partly because I have great interest in online resources development and partly so that my role involves less travel so that I can spend more time with my wife and new son. I look forward to taking up my new role and I will continue to do some work with the FMSP, particularly in the area of STEP/AEA/MAT/problem-solving support.

As ever please check furthermaths.org.uk for more details of all of the activity of the FMSP and to contact the FMSP.



Richard Lissaman
Programme leader (FMSP)

[Email Richard](mailto:richard.lissaman@mei.org.uk)



Mathematics in Education and Industry

Supporting mathematics
education nationwide,
providing professional
development for teachers
and developing innovative
resources for the classroom

Mathematics in Education and Industry
Monckton House
Epsom Centre
White Horse Business Park
Trowbridge
Wiltshire
BA14 0XG

Phone: 01225 776776

Fax: 01225 775755

E-mail: office@mei.org.uk

Company registration number: 3265490

Websites:

MEI:

mei.org.uk

FMSP:

furthermaths.org.uk

MEI conference:

conference.mei.org.uk

Integral mathematics resources: integralmaths.org

Facebook:

facebook.com/MEIMaths

Twitter:

twitter.com/MEImaths

twitter.com/MEIConference

About MEI

Mathematics in Education and Industry (MEI) is a membership organisation and a charity. Since the 1960s, MEI has worked to support mathematics teaching and learning. Any income generated through MEI's work is used to support mathematics education.

MEI emphasises understanding and enjoyment of mathematics and also highlights the importance of mathematics in industry and commerce.

MEI pioneers the development of innovative teaching and learning resources, including extensive online materials to support all major examination syllabuses.

MEI offers teachers of all GCSE and A level specifications a range of continuing professional development (CPD) courses, provides specialist tuition for students and works with industry to enhance mathematical skills in the workplace.

There is a network of MEI branches around the country, offering local support for teachers.

MEI's popular A level specification is administered by OCR, with MEI taking responsibility for the curriculum, and providing course textbooks published by Hodder Education.

MEI manages the government-funded Further Mathematics Support Programme, providing advice and

support for teachers of AS/A level Mathematics and Further Mathematics in schools and colleges throughout England.