

more maths grads



more maths grads
multiplying opportunities

newsletter

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

More Maths Grads - A Journey of 1,000 Steps

Alas, the final newsletter of the More Maths Grads project has arrived.

It has been an emotional, physical, mental and, at times, spiritual journey for me and the team. Lao-tzu, a Chinese philosopher (604 BC - 531 BC) was once quoted as saying, "A journey of a thousand miles begins with a single step." This quote seems apt as the More Maths Grads project officially comes to a close. We started off with small steps – uniting with other maths partners – to create change in the hearts and minds of parents, teachers, employers and of course, above all, students.

In our More Maths Grads journey, we have made great friends, inspired new ideas, and ultimately played our part with the maths community to showcase the beauty of maths and the multitude of paths that can be opened up by choosing to study it.

The legacy of the project is the More Maths Grads in a Box – a physical box that provides many resources to help

bring maths to life in the classroom as well as showcasing good practice. All these resources are also available on the www.mathscareers.org.uk website – free to download!

So as our journey ends, I guess it is more au revoir than goodbye, as I know that the hard work of More Maths Grads will continue to blossom. It brings to mind an essay written by D. Everett in *The Columbian Orator*, 1797:

*"Large streams from little fountains flow,
Tall oaks from little acorns grow."*

More Maths Grads may be officially over, but the legacy will remain for years to come. And the work of the project will continue over the next three years through the HEFCE-funded HE STEM programme www.stemprogramme.com.

This new project will work with universities, employers and science, technology, engineering and mathematics organisations to try to encourage more people to study these subjects and ensure that the UK workforce has the skills it needs in these

subjects. I am delighted that I will be working for this project and look forward to picking up my journey as it continues on from a well-trodden path in a new direction.

I think journey is a wonderful word, be it as a verb, adjective or noun. I have always liked the word, and I have even written a book with that title. But that's another story...

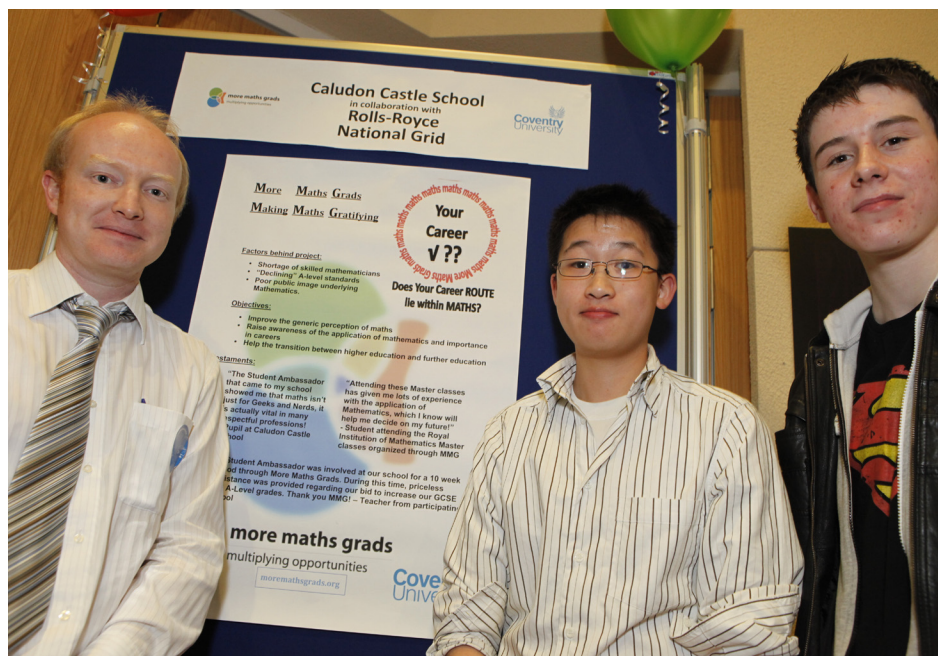
Enjoy this final and nostalgic edition of the More Maths Grads newsletter. As you flick through the pages, you will see that More Maths Grads was a success because of one single factor: the people who were involved. The whole maths community came together to make this project a success and so I want to say a BIG THANKS TO ALL! I wish you all a bon voyage on whatever journey lies ahead for each and everyone of you.

*Makhan Singh
More Maths Grads,
National Project Manager*



Regional Roundup

West Midlands



Dr Steve Jones, Head of Mathematics at Caludon Castle School with Nuffield work placement students

As More Maths Grads came towards its completion in the West Midlands, we are proud to look back and see that, regionally, we have introduced a successful model of mathematics enrichment to the young people we worked with, bringing together higher education, the local education authority, employers and schools.

The More Maths Grads – Nuffield work placement schemes over the summer were a fantastic success, with the enthusiastic year 12 students working at local employers Rolls Royce, Coventry University, the National Grid, Unipart Manufacturing and Midland Group Training Services. The students took part in the regional celebration event in October at Birmingham University, where Richard Hyett was awarded the Best Maths Project award on his project at Rolls Royce. All the students enthusiastically presented their project posters to the judges, members of the public.

The More Maths Grads student ambassadors continued their work in partner schools, in order to build relationships with schools and motivate

students. The support which student ambassadors and coordinators provided during revision days for year 11 and year 12 was highly valued and appreciated by schools.

In November, the team took part in two career fairs in collaboration with Connexions in Rugby and at Tile Hill Wood School & Language College in Coventry. The participants were keen to know about the available career opportunities and resources in mathematics.

We also enjoyed working with the Royal Institution of Great Britain to organise a series of seven Saturday morning Mathematics Masterclasses for 40 year 9 students from Coventry, Warwickshire and Solihull. The interactive and exciting mathematics sessions were presented by prominent mathematicians from around the country which included An ULTRA Secret Story, Coincidences, Binary Numbers, How to make millions with the maths you learn at school, A sequence of sequences, Celtic knots and the virtual session Dynamical Systems: Langton's Ant, the Game of Life and the Mandelbrot Set.

Excellent feedback was received from both students and parents on the sessions and organisation of the event. One student commented "The event has changed the way I think about maths in a positive way showing what you can do with maths later in life".

In addition to this the team also:

- collaborated with Maths Inspiration, with 150 students from our partner schools attending an event in Birmingham in November
- organised an Improving A-Level Standards conference joint with Coventry & Warwickshire LEAs and Ogden Trust. This was attended by 100 maths teachers, who rated it as "excellent and very useful"! The highlights were a keynote speech by Dr Ben Evans from Swansea University on Bloodhound SSC project and a discussion session featuring an industrial panel of mathematics professionals.
- More Maths Grads also collaborated in Coventry University's Christmas lecture which was delivered by renowned mathematician Sir Roger Penrose.

Lastly, the West Midlands More Maths Grads regional finale took place on 25 November. This was an opportunity to say a huge "Thank you!" to all the partners, to celebrate the success of the project and to showcase its impact on the region. The best-selling author Rob Eastaway gave a very enjoyable talk, AH, AHA and HAHA - The creative side of maths and the event was attended by over 220 people from all quarters of society - including Deputy Lord Mayor of Coventry and the Vice Chancellor of Coventry University, Professor Madeleine Atkins.

Farzana Aslam
Project Officer, West Midlands region

Yorkshire and Humberside

The More Maths Grads project may be nearing completion but there has certainly still been lots going on in the Yorkshire and Humber region. These activities have been wide and varied – working directly with students and teachers, developing resources that will last long beyond the end of MMG, and paving the way for key events to continue in 2010.

In October we held a brand new event, Think you know what an Engineer does?, in collaboration with the University of Leeds' Faculty of Engineering. The day explored

lots of different areas of engineering. It showed the A-level maths and physics students the importance of mathematical skills but they also discovered how creativity was an important element in engineering. They met people working in industry during a workshop with Rolls Royce and also academics and PhD students. They needed all their expertise to successfully complete the egg-drop challenge with the mechanical engineers!

Our continuing collaboration with the National Centre for the Excellence in Teaching Mathematics has produced

several more *Maths in Work* video clips which show people using mathematics in their everyday work. Take a look at the NCTEM microsite (<https://www.ncetm.org.uk/resources/11329>).

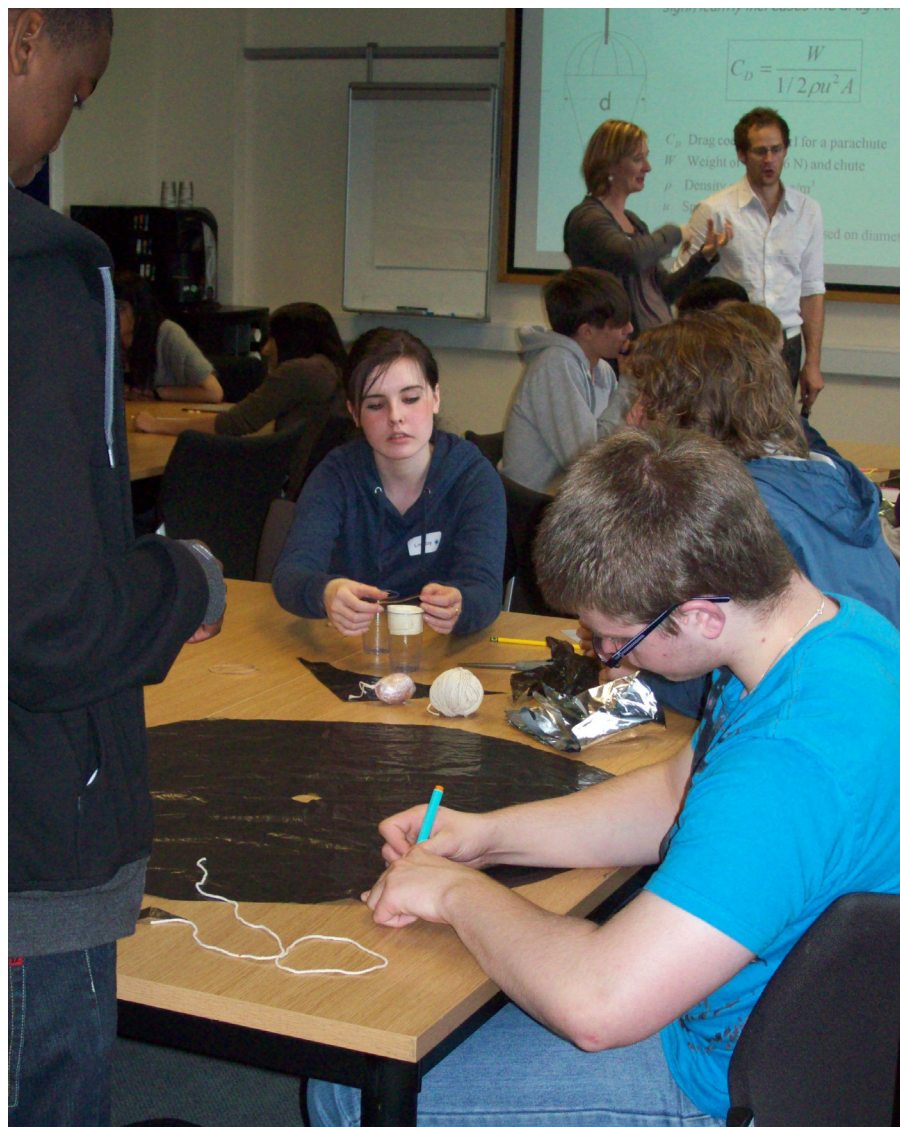
Working with a local teacher we have also completed a set of posters showing how maths is used in different schools subjects. These posters will be included in the MMG in a Box set of resources which will be delivered to all schools in England in 2010.

We are sad that More Maths Grads is nearly over, it has been a pleasure and a privilege to have worked with many wonderful schools, companies and organisations promoting mathematics. We have been continually encouraged by the enthusiastic response of so many students. We hope that they continue to enjoy their mathematical study and who knows where mathematics will take them over the next few years.

Finally, don't think that things are completely over! We have been working closely with the Further Maths Support Programme (www.furthermaths.org.uk) to ensure that some key events in the region continue such as the February Half Term Competition and the University of Leeds Pop Maths Quiz (see www.maths.leeds.ac.uk/popmaths and www.popmaths.com for more details).

We are always excited to see the maths all around us. Only this morning, I was talking to a theatre director about how he uses maths constantly. He mentioned angles in particular, which he uses when considering the audience's view of the set and the sound and lighting they will experience. An ongoing theme of More Maths Grads has been to encourage school students to notice the maths and mathematical applications which are so important in our daily lives and in so many careers.

Ruth Holland
Project Officer, Yorkshire and Humber region



Think you know what an Engineer does? at the University of Leeds

Regional Roundup

East London

In the immortal words of many a blockbuster movie (but delivered in the style of Vinnie Jones à la Lock, Stock...): – “It’s been emotional”. We have come to the end of the journey here at More Maths Grads in London and it still feels like there is so much more to be done.

We have been supremely busy wrapping things up and delivering sessions in schools, fairs and events across the country and - casting an envious glance at my colleague Matt - across the globe.

We have both been busy writing more articles to add to the original What’s the Point of... series and now have a total of 26 articles all of which will be available on the new DVD and on the www.mathscareers.org.uk website.

Matt has also been doing other media work including trying to explain the etiquette of splitting a restaurant bill for the Training and Development Agency for Schools, which he then had to explain for the readership of the Daily Mail too (<http://bit.ly/1YZMTa>). We also put up the latest instalment of the MMG YouTube videos (<http://bit.ly/4r3eL6> and <http://bit.ly/6BTbdr>)

Zia has been busy touring the length and breadth of the country having a fascinating time meeting many students who have thoroughly impressed me with their attitude and behaviour, as well as their mathematical knowledge – in particular thanks to Northallertonshire School, Dr Thomlinson’s Church of England Middle School and Queen Elizabeth’s School for supporting their

students, each of whom were presented with prizes from our competitions.

Finishing on another Hollywood note – there are far too many people to thank and send our best to – but it would be remiss not to mention special thanks to Jenny Allam, Vivien Easson, Peter McOwan and David Arrowsmith.

Wishing you all the best... and adieu.

Zia Rahman
Project Officer, East London region



Zia presenting prizes to students of Dr Thomlinson’s C of E Middle School

Curriculum News

Neil, Mike and Mike in the HE curriculum team have been engaged in a flurry of activity aiming to finish all their writing. Looking back, what have we done, what lingers in our minds, and what may happen next?

We have asked a good number of mathematical sciences students how things are in the world of mathematics degrees; we asked a range of academic staff too. We digested and analysed what we heard and read, and used the results as a basis for articles and talks on curriculum, on learning, on teaching and assessment, and on how we support our students. We found some obvious things and some not so obvious. We found that greater understanding and acknowledgement between staff and students of each others' aspirations and motivations could do no harm. We collected some good ideas for teaching and learning, and tried to get discussion going. We are establishing a website to encourage sharing and discussion.

Other questions have also been addressed. Why does Mathematics have a lower proportion of mature adult returners-to-study than most other subjects? We perceive that information is poor, and that there can be issues at the interface between access courses and mathematics degrees. We raised the issue of the Polymaths course (a one year part-time open-access course in

a combination of mathematical disciplines which takes students to A-level standard) and hope we may prompt a small revival.

Related to this is the issue of regional coverage of mathematics degrees. We have revisited existing knowledge that if you want to stay at your current home and study for a mathematics degree, there are some areas of the country where your options are very restricted or non-existent. In many cases, students and their advisors do not understand that not all mathematics degrees are the same, so we worked with partners to produce a booklet called *Maths@University*, which aims to help potential students to get onto the maths degree which suits them best. This is being widely distributed.

We have spent some time finding out about students' motivations to study for a maths degree, and found that, while enthusiasm and enjoyment were frequently mentioned, the desire to be highly employable and to get a good job upon graduation also featured prominently. We therefore spent some time considering how we can and do fit into the HE maths curriculum both the development of those skills which make one employable, and also a developing awareness of career possibilities.

We looked at why mathematical sciences are not prominent in Foundation degree development as a way of engaging with

employers. We have made some proposals for work on this type of development to take place under the National HE STEM Programme.

We have spread our messages through published articles, at subject conferences, to heads of departments, in departmental seminars and reviews and on YouTube. Now we have gathered together all our writings in a book - *Maths at university: reflections on experience, practice and provision* published by More Maths Grads. It contains both published and previously unpublished articles, together with a collection of case studies from others on various aspects of the university maths experience. (To order a copy, contact us via email.)

Impact may be slow-burning but we hope to propagate our key message that satisfied students, whatever their motivations, enthusiasms and aspirations, equal a healthy mathematical ecosystem!

Neil Challis, Mike Robinson,
Mike Thomlinson
n.challis@shu.ac.uk, m.robinson@shu.ac.uk,
m.m.thomlinson@shu.ac.uk

Regional Roundup

Welsh Project



"The resources pack created by MMG has been particularly effective in Wales, bridging the gap between study and an idea of how the skills learned can play a part in a range of careers. Partnerships are now in place between schools in Wales, employers and local education authorities which we believe offer a good prospect of continuing to build on the success of this programme: we are fully confident that it has made, and will continue to make, a difference."

HEFCW





"The funding council in Wales is grateful to have been involved in this landmark programme. When we decided to join with colleagues in England to work with '**More Maths Grads**', we saw it as an important opportunity to heighten enthusiasm and raise the profile of the study of mathematics in schools. Wales has been looking hard at how best to improve the teaching of maths and the take-up of the subject in our universities, and we have **been delighted with the emerging evidence of this programme's success.**"

HEFCW



News & Features

Maths plus Celebrities promoting Maths equals More Maths Grads!

Over the past two years More Maths Grads has had support and endorsements from a number of celebrities, showing that maths counts no matter who you are and what you do. More Maths Grads also met many inspirational individuals along the way who use maths in a range of careers. For us, everyone that we encountered has been an inspiration and a celebrity in their own right as they pioneer and drive the momentum of maths forward. We'll let the pictures do the talking....

Rachel Riley



I think that generally it's cool to see maths as a boring subject at school but when you reach university, people begin to give you a lot of respect for doing it.

Kate Bellingham



After presenting on Tomorrow's World, Kate went on to train and work as a maths teacher and has now returned to her media work. Kate is promoting STEM (science, technology, engineering and maths) careers to the general public and is a keen supporter of More Maths Grads



Charles Clarke MP



Maths is a way of thinking about the world. In my eyes, it's more than manipulation of numbers, but rather a conception of the world and its philosophy. I would advise any young person considering maths to have, above anything else, confidence and passion in the subject.

Nick Clegg MP



Go for it! There is a huge shortage of mathematicians and it's a great opportunity to get ahead, as well as helping keep our country competitive in the global economy.

News & Features

Adam Hart-Davies



“ Maths is the backbone behind all great creations and inventions in civilizations. It is amazing what formulae and calculations can create and give to the world. The world continues to change and grow because of the useful application of maths. ”

Henry Winkler



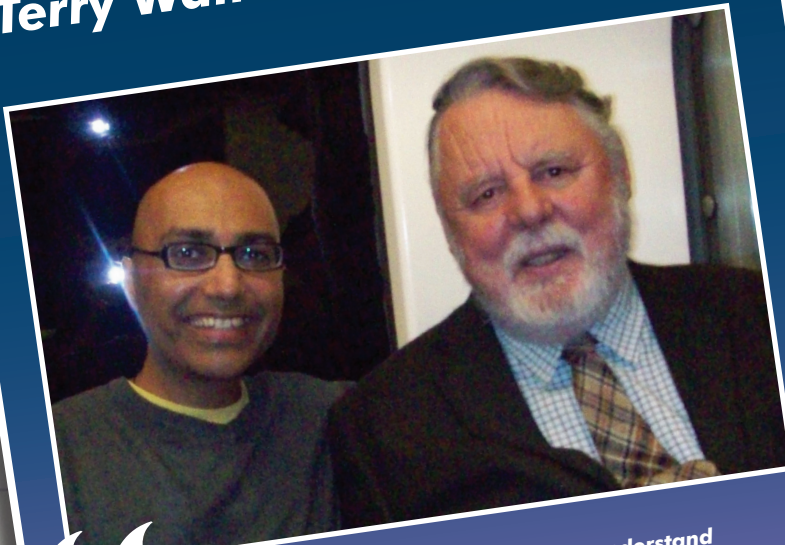
“ Don't give up. Everyone has their own brilliance. Find your gift, your greatness and you will eventually meet your destiny. ”

Simon Weston OBE



Look at the bigger picture - don't become so focussed on just one thing that you forget what your end objective is. Don't just focus on the ball; focus on the goal and field around you too.

Terry Waite CBE



I suppose what children really need to understand is the reason for maths. Seeing maths in the world brings the subject to life.

Welcome to **more maths grads In a Box**. In here you will find a collection of maths-related posters, postcards, leaflets and resources that highlight the many ways in which maths is used in everyday settings.

1. What's the Point ... index posters
2. What's the Point ... 20 x A2 posters
3. What's the Point ... booklet
4. Subject posters/postcards (A3/A4/postcards)
5. Origami posters/postcards (A3/A4/postcards)
6. Cut Through the Numbers poster/postcards (A3/A4/postcards)
7. Question Mark poster/postcards (A3/A4/postcards)

8. Career Profiles booklet
9. Enrichment Activities booklet
10. What do we need Maths for? booklet
11. Everyday Maths booklet
12. Maths Careers booklet
13. Engaging Maths booklet
14. STEM Maths Directory, leaflet and Ambassadors leaflet
15. The Maths Inside
16. RSS Booklet

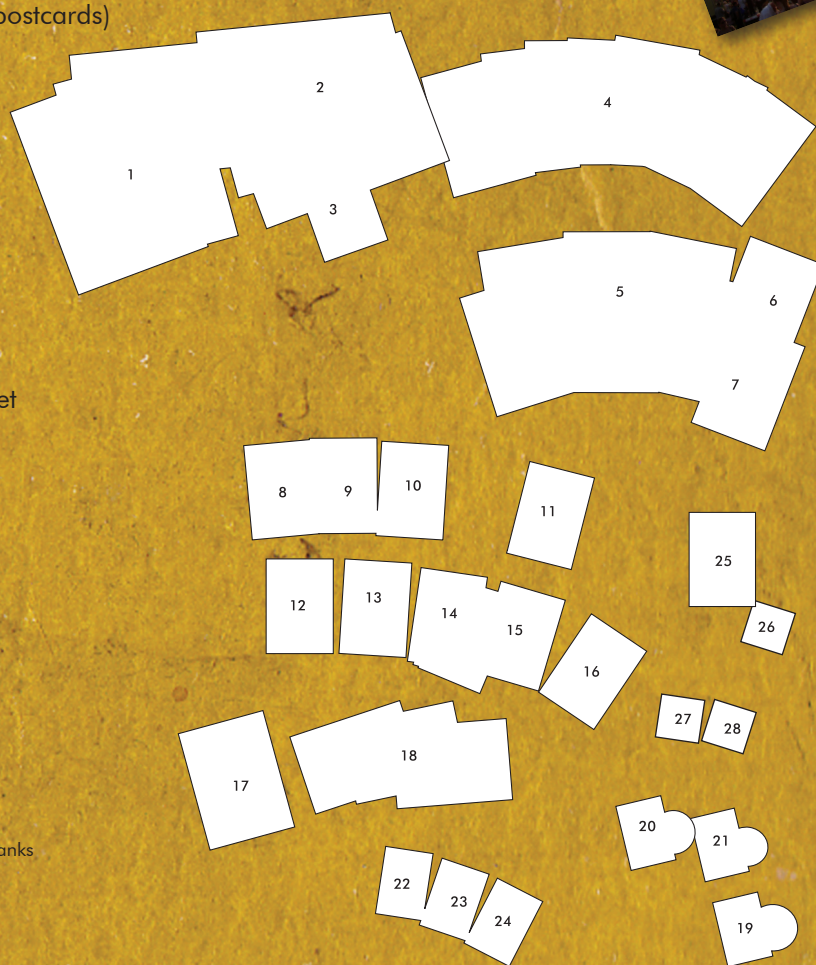
17. Maths Careers Poster
18. FMSP Posters by undergraduates 3 x A2

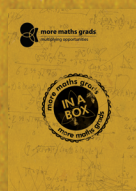
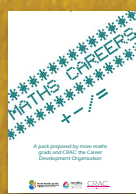
19. What's the Point DVD
20. Maths at Work DVD
21. Maths Counts DVD

22. *more maths grads* Young Persons' Information leaflet
23. Maths at University booklet
24. The Magic of Computer Science book

Developed by the cs4fn project (www.cs4fn.org), and included in this box thanks to the support of EPSRC and Google

25. *more maths grads* in a Box booklet
26. *more maths grads* in a Box Tutorial DVD
27. Disk of black and white resources
28. Disk of colour resources





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10. Enrichment Activities booklet
11. What do we need Maths for? booklet
12. Good Practice Guide booklet
13. Everyday Maths booklet
14. Good Ideas Guide booklet (only for maths departments)
15. Maths Careers booklet
16. Engaging Maths booklet
17. STEM Maths Directory, leaflet and Ambassadors leaflet
18. The Maths Inside booklet
19. RSS Booklet

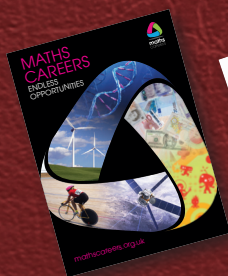
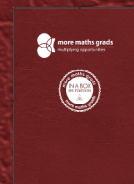
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News & Features

More Maths Grads in Parliament: *Where will maths take you?*

One of the final duties of the More Maths Grads team was to attend a very enjoyable event in one of the hallowed reception rooms in the House of Commons. The *Where will maths take you?* reception on 27 January 2010 celebrated the achievements of the MMG project over the past three years and was hosted by former Secretary of State for Education and Skills, the Rt Hon Charles Clarke MP.

Mr Clarke, who studied mathematics himself, congratulated the project on its work, and underlined the importance of learning mathematics for every citizen to enable them to understand and make sense of the world. He told guests, "Mathematics is a tremendously important discipline. It is at the core of everything we see around us. It has to be supported and encouraged in every way it can.

"We have to stand up at all levels and get more mathematics into the way we live and work and more mathematics in the way we educate. More maths grads, more maths teachers, more maths qualifications."

The event set out to demonstrate the crucial role the mathematical sciences play in further study and careers in STEM (science, technology, engineering and mathematics) as More Maths Grads comes to a close and the National HE STEM Programme begins.

The room was packed out with over 120 guests, including MPs and peers, government officials and funders as well as representatives from business and industry, other mathematical and science organisations and supporters of the project.

Other speakers were Dr John Selby from the Higher Education Funding Council for England, the primary funder of the project; Professor Duncan Lawson and Makhan Singh, representing MMG; Eddy Pryce, a head of maths from a school in Coventry which was a partner in the project; Dr Andy Garrett, from the RSS, who represented industry's view as vice president of Quintiles; and Dame Julia Higgins who represented the view from the STEM community.





To view highlights from the event please visit:
www.moremathsgrads.org.uk or www.mathscareers.org.uk or
www.youtube.com (search: more maths grads)



multiplying opportunities