

Bespoke

NEWS from the Maths Hubs Programme

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Welcome to our spring term edition of Bespoke, which highlights the diversity of professional and school development activities available for teachers to engage in with their local Maths Hub. We also profile some of the individuals in leadership roles across the network.

Specialist Knowledge for Teaching Mathematics (SKTM)

It's long been recognised that a teacher needs subject knowledge in order to teach. If you can't do the maths, how can you teach it? But is that enough? Obviously not.

A teacher of any subject needs some additional pedagogical knowledge that takes into account how learning happens, and how learning can be facilitated. But can a generic knowledge of pedagogical principles cover the teaching of all subjects? No. That's why the Maths Hubs Network has developed a suite of programmes that blend subject knowledge with maths-specific pedagogy. We describe these programmes as covering Specialist Knowledge for Teaching Mathematics (SKTM). And behind that word 'specialist' lies so much more than what has previously been understood by 'subject' knowledge.

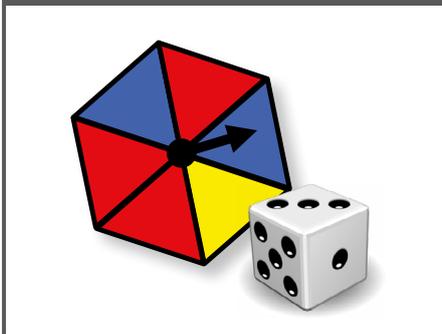
There are separate programmes tailored to teachers and practitioners in the following areas:

- Early Years
- Primary teachers
- Primary teaching assistants

- Secondary non-specialist teachers
- Early Career Teachers (primary and secondary)
- Teachers new to Core Maths.

Each Maths Hub runs its own programmes, drawing on resources produced centrally by the NCETM, and shaped by a local Cohort Lead, who is a teacher experienced in leading professional development and in the school phase in question.

What questions would you ask to find out what students understand about probability?



Participants attend a series of half-day or twilight sessions – some face-to-face; some online – with time to work on aspects of their teaching in their own school between the sessions. There's also plenty of time in sessions for discussions around the maths and how best to teach it. In contrast to the Work Group model of CPD, where a key objective is to develop practice across a school or a department, the principal aim of the SKTM programmes is to develop individuals as classroom practitioners. In 2020/21, **95% of participants** responding to a survey said their knowledge of how to teach maths had been enhanced by the programme.

It's been helpful in highlighting the steps in understanding required before a child can fully grasp the various mathematical concepts.

Teaching assistant

It has made a huge difference to how I teach every day.

Early Years teacher

I will definitely be focusing on the specific language I use during my maths teaching.

Primary teacher

This programme has given me new strategies that I can use with my students in the classroom and enabled me to explain key concepts in different ways.

Secondary non-specialist teacher



Research and innovation in the Maths Hubs Network

The Maths Hubs Programme has grown from grassroots identification of local needs and continues to develop and innovate with ideas from teachers in classrooms.

Each year, the Maths Hubs Programme includes a mix of large-scale, well-established national CPD projects run in every hub, smaller-scale established projects that hubs can opt to be part of, and Research and Innovation Work Groups (RIWGs) that are literally trying out some ideas from teachers in classrooms.

RIWGs are fundamental to the Maths Hubs Programme's evolution and the network's commitment to improve through innovation and refinement. They are a key component in Maths Hubs' agility to respond swiftly to emerging need, for example, during the pandemic.

How does an RIWG start?

Sometimes a Research and Innovation Work Group can start with a local teacher, or group of teachers having an idea for improving teaching and learning or noticing something in their classrooms that they would like to research. With the support of their Maths Hub, this idea can be proposed for an RIWG, so that it can be worked on by a group of teachers in a Work Group.

How could an RIWG influence the Maths Hubs Programme?

RIWGs must fit within the Maths Hubs culture of innovation, research and collaboration, and have the potential to be scaled up if successful. Risk-taking is the nature of innovation and it is understood that some of these ideas may not be worth continuing beyond their first year. However, those that show promise are, in their second year, scaled up and more hubs can be involved.

Eventually such projects may become nationally-established favourites, available in every region, such as the current Mastery Readiness Programme, or they may influence design in existing national programmes.



Jane's students talking about what they notice in prime factor decomposition of numbers to 100

// You can have the most amazing innovative idea. However, if you have no way of experimenting, testing, sharing and refining, your great idea can just get lost. You need to be part of something bigger to really influence improvements in maths education. //

Heidi Whitney
NCETM Lead for RIWGs



Parental engagement

Simon Petri, Maths Hub Lead at North East Hants and Surrey Maths Hub, identified an emerging need during the pandemic.

// Through periods of lockdown it was clear that schools were struggling to help parents to support their child's learning at home. A number of teachers were asking for advice on how to best support parents and that's where it all began. //

Having recognised a need, Simon found expertise in another hub in the network (Sussex) and proposed an RIWG in his own hub. This year the Work Group is one of two in the network working on parental engagement and is drawing on recent research from the EEF and past experience from other teachers working in the Maths Hubs Network. The Work Group brings together pairs of teachers from secondary and feeder primaries to look at how they can build parental engagement to support transition.

Research question

What impact can positive, structured and supported parental engagement have on KS2/3 transition?

Reach

Two Maths Hubs currently run Work Groups on parental engagement.

Cross-curricular professional development design

Ever wondered why students persist in drawing curved lines of best fit? Have you ever seen a student omit a piece of outlier data when calculating a mean? And isn't it frustrating that the use of formula triangles to solve simple equations gives students no tools for solving more complicated equations?

In 2020/21, Nicola Coe, Maths Hub Lead at Angles Maths Hub, thought it was time to bring together pairs of maths and science teachers in her school and others locally, to understand the differences and crossovers in their subjects. They looked at what was being taught when and how, and what each subject could do to complement and support the other, rather than undermining it. Now in its second year, ten other Maths Hubs are involved and the project is growing.

Research question

How do we design models of professional development that enable maths and science teachers to support pupils in making meaningful connections across subjects?

Reach 12 Work Groups in 11 Maths Hubs



// The NCETM has given us a voice to say 'I have a little idea, can I try it?' If it doesn't work, there's no shame, it doesn't matter, it might help something else. Or it might work, and grow into something that can influence maths education across England. //

Oracy

Jane Hawkins, maths teacher at Cullompton Community College and an Assistant Hub Lead at Jurassic Maths Hub, has always expected her students to do a lot of mathematical talking. But it wasn't until her HoD commented on it that she started reading up on oracy and trying out new strategies to get students talking.

In 2020/21, Jane proposed an RIWG with Jurassic Maths Hub to investigate mathematical oracy further, collaborating with other teachers in the South West. Centrally, the NCETM put her in touch with seven other Work Groups all over the country and across all phases from EYFS to KS5, who were working under the similar theme of mathematical talk.

Following on from their work, in 2021/22, all Maths Hubs were given the option to form Work Groups in their regions tailored to local need but to work under the same research question.

There are now 21 hubs across the country working on the theme, meeting regularly to discuss their findings. When the Work Group is evaluated, the findings may inform the design of national projects in 2022/23.

Research question

How can oracy deepen pupils' mathematical reasoning?

Reach 21 Maths Hubs



// Not only does mathematical talk help students to understand what they are learning, it also helps me to assess what and how they understand, so much more than an exercise book full of answers. //

Leadership roles in Maths Hubs

Every Maths Hub has several people in leadership roles: each one combining expertise in a phase of teaching and maths-specific professional development. They also have knowledge of the local school landscape. Most are school-based and most also have leadership roles within a school.



Samira Ahmed
Maths Hub Lead for
London North East Maths Hub



Tom Bennison
Assistant Maths Hub Lead (Post-16)
for East Midlands West Maths Hub



Kate Henshall
Assistant Maths Hub Lead (Primary)
for West Yorkshire Maths Hub.



Sam Phillips
Assistant Maths Hub Lead
(Secondary) for Angles Maths Hub

Working week

Two days a week on Maths Hub Lead role. Other hub leadership roles (Senior Lead and Secondary Assistant Lead) take up another day and a half. I also lead on Relationships and Sex Education at my primary school.

Why I like my Maths Hub role

One of the things I love most about my role is its ever-changing nature. Each year has brought with it new programmes, challenges, and opportunities. Having led the hub for seven years, I've thoroughly enjoyed identifying, filling and shaping both leadership roles and all those we classify as local leaders of maths education (LLME). Ultimately, what keeps me in this role is having the autonomy and opportunities to share the benefits of a wonderful pedagogy and witnessing change in people's hearts, minds and professional practice.

Working week

Half a day a week for the Maths Hub, flexibly distributed over busy and quieter weeks. My main job is as a Head of Sixth Form at an 11-18 school in Derbyshire.

Why I like my Maths Hub role

One of the things I enjoy the most about my Maths Hub role is the diversity of conversations that I get to have with leaders of post-16 mathematics in my region and across the country. I have made lasting professional and personal relationships in my work with local schools and it is exciting to see the impact the Maths Hub, through our various Work Groups, is having on local post-16 mathematics provision.

Working week

Two days a week for the Maths Hub. Outside that, I work with maths leaders and teachers as the Primary Maths Advisor for Trinity MAT, centred in Halifax.

Why I like my Maths Hub role

I love the variety and experience of working with a wide range of schools. You build lasting relationships with schools and really get to know them. It's always wonderful to see the impact the Maths Hub's programmes have and how Work Groups can support schools to make positive changes in mathematics. I'm also exceptionally grateful to be a part of the wider network of Maths Hubs, knowing that there will be someone in a different region on hand to share practice and collaborate.

Working week

Three days a week in the Maths Hub Lead role and one day planning and running Work Groups across the region. That apart, I work for myself, offering tutoring, teaching and training support.

Why I like my Maths Hub role

I enjoy leading a fantastic team who deliver high quality maths CPD across Norfolk and Suffolk. With the valuable support of the NCETM community, we offer a range of excellent Work Groups where professionals come together to explore the teaching of maths, sharing their ideas and experiences. Ultimately, my role is highly rewarding as I get to work closely with secondary schools and can see first-hand the positive impact our work is having on maths education in the region.

Stepping from a Maths Hub role

Maths Hub Leadership role has proved a great stepping-stone into other senior school leadership positions.

Here are three recent examples:

1

Lisa Pollard: Maths Hub Lead for Boolean Maths Hub to **Director of Education** at the Palladian Academy Trust, based in Bath.

2

Justin Dodd: Maths Hub Lead for Kent and Medway Maths Hub to **Deputy Head** at Highworth Grammar School in Ashford, Kent.

3

James Coughlan: Maths Hub Lead at Central Maths Hub to **Principal** at Bishop Challoner Catholic College, Birmingham.