Term: Autumn | Issue 2 | Date: 14th October 2021

NEWS FROM OUR SENIOR LEAD, ABHA MILLER

Another term and another consultation. I hope you all had the chance to feedback on this one which closed 11.45pm yesterday!

https://www.gov.uk/government/consultations/contingency-arrangements-gcse-as-a-level-project-and-aea/contingency-arrangements-gcse-as-a-level-project-and-aea

Rest assured that whatever happens we will keep you in the loop and keep you up to date with free training and advice. NCETM also is working hard to support you and I would strongly encourage you to you to look at the Secondary subject knowledge audit resources . **Secondary Subject Knowledge Audit | NCETM**

But above all , I hope you have a great half-term and come back to school safe and healthy.

Best wishes

Abha

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If you are having trouble opening the links in this newsletter in the online viewer please click on the book icon on the bottom right to disable page turn transitions

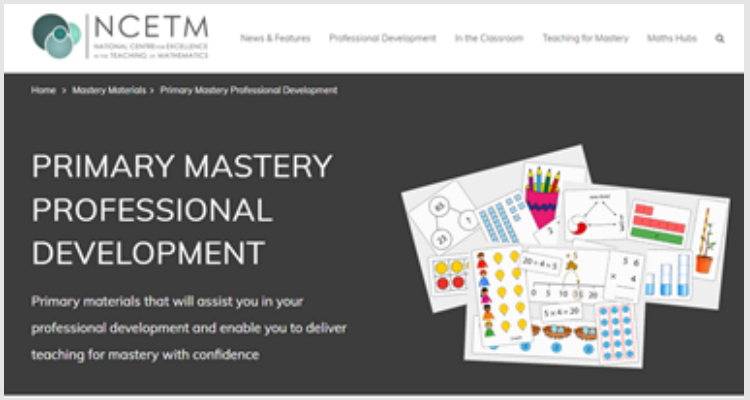
Working with NCETM NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS

Using the NCETM Professional Development Materials

PRIMARY

Kelly De Santis, Primary Mastery Specialist

As a cluster of schools in Oxfordshire we had been dipping into the NCETM Professional Development Material**s** to help support our planning. Teachers were using them to look at the representations that could be used to expose the mathematical structure and how to break down the learning into small manageable steps of learning. We quickly saw the benefit of using these documents more fully in our approach to planning so for the last two years we have been using them as our main go to and have seen many positive outcomes because of it.



Here are some reasons why we love them:

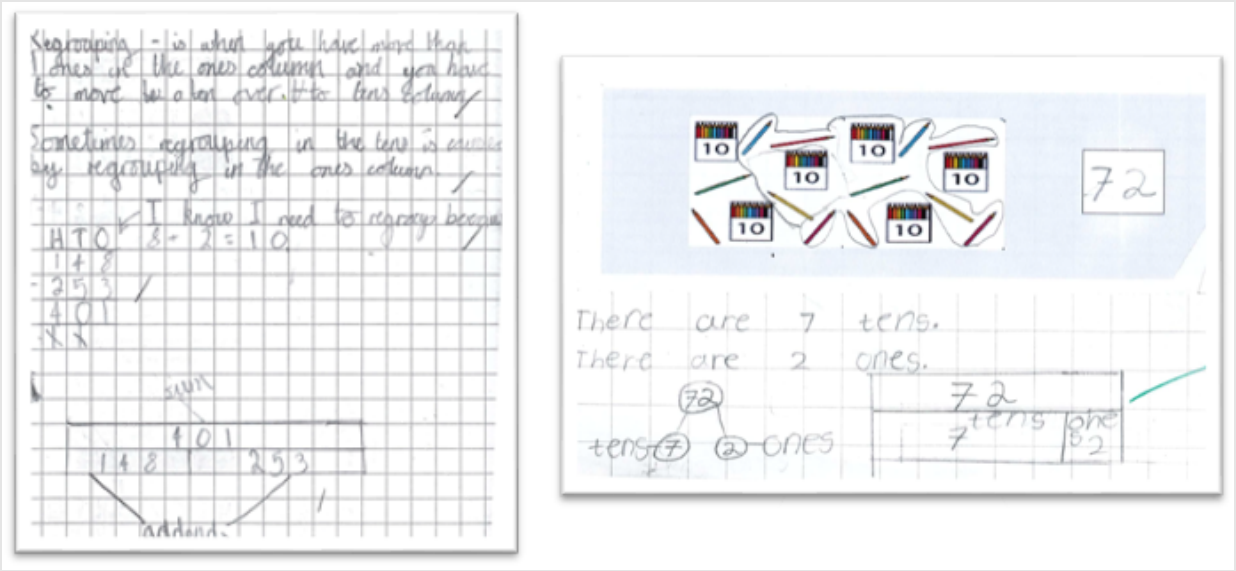
- First and foremost, these materials are an excellent resource to help **aid teacher's subject knowledge** in what they are teaching. Each topic has a teacher guide with clear and concise guidance, and these have been hugely beneficial during our collaborative planning discussions.Teachers come to their planning meeting having read through the relevant guide and then discuss how to deliver this content to ensure children are developing a deep and secure understanding of the concept being taught.
- There are resources that can **help with planning and sequencing your Maths' curriculum**. The PPTs provided for each topic have been great starting points for our teachers, as they have representations and animations already set out. We use these to then generate our own class slides like below:

- For number, addition and subtraction, multiplication and division and fractions there are **detailed small steps that are coherent, progressive, and connected**. As a collection of schools, we have noticed that due to this, even our most vulnerable children are able to access the learning and make progress from their starting points.
- The teaching guides have supported teachers to develop oracy within the maths' lessons as **clear sentence stems** are provided throughout. Within lessons, children confidently use these within their own mathematical reasoning in class discussion, partner talk and within their written work.

Using the NCETM Professional Development Materials (cont.)

PRIMARY

Kelly De Santis, Primary Mastery Specialist



- The deliberate choice of **representations** used throughout the documents mean that children can see the mathematical structure of the concept they are learning. We have found that by using these consistent representations, our children are able to build on their existing knowledge in the next year group and this has aided their understanding and recall of prior learning.

Cross Phase Work Group

Strengthening Partnerships with ITT Providers

Providers and mentors from primary and secondary ITT routes are invited to participate in a Work Group at the BBO Maths Hub. The first meeting will be online on 3 November.

This online work group is creating a mentor-led cross-phase resource about working with trainees on the principles of teaching mathematics. It will consist of tasks that can be done by mentor and trainee together that put mathematics at the heart of learning to teach it. The resource relates to parts of the Common Core Framework for ITT, principles of teaching for mastery and other pedagogic approaches, teacher subject knowledge, and also takes into account research about the development of novice teachers.

We are looking for mentors and providers to contribute to this work through joining this interactive work group. The commitment will be 4 or 5 after-school online meetings throughout the school year and some interim tasks. It may be possible to have some visits between schools.

As well as contributing to the resource, participants so far have found it beneficial for their own practice as mentors and teacher educators in mathematics.

The programme will be led by Anne Watson (Emeritus Professor of Mathematics Education, University of Oxford)

Anne Watson is co-editor: Jaworski & Watson 'Mentoring in Mathematics Teaching' Falmer Press, 1994 and co-author of Watson & De Geest 'Communicating about Mathematics in School' e-book available from ATM.

To register your interest, please use the button to email us at the BBO Hub. MORE INFO REGISTER INTEREST

Why Mastery Maths?

SECONDARY

Rehana Akhtar, Secondary Mastery Specialist

The Program for International Student Assessment (PISA) is a worldwide study by OECD (The Organisation for Economic Co-operation and Development) in 70 nations of 15-year-old students' scholastic performance on mathematics, science and reading. PISA collect educational achievement data and provide information about trends in performance over time. The position for the United Kingdom in the 2015 PISA rankings was 27th. The top five places are consistently taken by East Asian jurisdictions such as Shanghai and Singapore.

As Maths Lead Practitioner at a local upper school, I wanted to ensure that we provided pupils with the best possible delivery. After researching options I joined the BBO Maths Hub and the NCETM.My department and I have had the pleasure of benefiting from many of the work groups offered. We have taken part in the Embedding Mastery, Sustaining Mastery, PD Lead Programme and the Mastery Specialist programme.The workgroups and programmes began by looking in-depth at the NCETM's website / resources coupled with the principles of 'Mastery Maths'. As a Maths lead, this was an invaluable experience for me, as it enabled me to develop my understanding deeper of progression and pedagogy in mathematics. Through analysing relevant research and resources, we were able to discuss the importance of direct teaching, alongside opportunities for rethinking curriculum design. Careful planning was carried out which looked critically into the sequencing of lessons and how to ensure that delivery was in a 'small steps' approach.

The use of high-quality resources are essential in creating engaging learning experiences for pupils. I have found that mastery teaching approaches and resources are hitting the nail on the head. Some essential components planned for in the workgroups for lesson design included:

- Opportunities for pupils to think mathematically: this is achieved through class activities which encourage discussion, with questions to ensure that the steps have been understood.
- Motivating students' learning by delivering an effective pedagogy
- Concrete Pictorial Abstract:using CPA activities help to build a truly rich, deep understanding of maths.
- Intelligent practice: setting exercises, which employ 'minimal variation' in the numbers to focus attention onto the key learning point – the surest way to lead to ultimate success with problem-solving questions.
- Mathematical language: ensuring precise and consistent use of mathematical language at all times and in all answers.

At St. Michael's Catholic School this is our fourth year into the 'Maths Mastery delivery' journey. Pupils have engaged well in the deepening of their understanding by appreciating structures and pictorial representations. Encouraging the accurate articulation of explanations has boosted confidence and excitement for the subject. Pupils have particularly enjoyed the use of algebraic discs and being able to connect the so abstract idea of algebra into something more concrete. Pupils have explored variables and ones with the use of algebra discs helping deepen understanding of the affect double operations have and manipulation of terms.

Having taken taken part in the various workgroup sessions, I would thoroughly recommend participation in a workgroup as a strategy for your school to either begin or continue to develop firm mathematical foundations with a Mastery approach.

Primary Work Groups

PRIMARY

The Maths Hub Programme has PD opportunities for all teachers at all stages in their careers and across all phases. Below is a summary of the FREE development opportunities that are on offer for primary teachers in 2021/22. Follow the links for further details on the NCETM website or contact info@bbomathshub.org.uk to discuss the best programme for you and your department.

For primary Work Groups, we are currently asking for those interested in participating to fill in an expression of interest form on our website so that we can keep in touch with dates and booking details once these are released and made available.

All of our Work Groups are free.

Specialist Knowledge for Teaching Mathematics - Early Years Teachers

This Work Group is designed to support Early Years teachers in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom. These programmes are designed for individuals who would like to develop their specialist knowledge for teaching maths to three to five years olds. This may be particularly relevant for NQTs, teachers that have moved phases, or teachers that have not received maths-specific training.

MORE INFO REGISTER INTEREST

Specialist Knowledge for Teaching Mathematics - Primary Teachers

This Work Group is designed to support primary teachers in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom.

The programme is designed for teachers who would like to further develop their specialist knowledge for teaching maths. It will be particularly relevant for teachers that have moved phases or teachers that have not received maths-specific training.

MORE INFO

REGISTER INTEREST

Specialist Knowledge for Teaching Mathematics - Primary Teaching Assistants

This project is designed to support primary teaching assistants in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom.

The programme is designed for primary teaching assistants who are supporting maths, and who would like to develop their specialist knowledge for teaching maths. It will be particularly relevant for new TAs or TAs that have not received maths-specific training.

MORE INFO

REGISTER INTEREST

Specialist Knowledge for Teaching Mathematics - Primary Early Career Teachers

This project is designed to support primary early career teachers (teachers in their first two years of teaching) in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support pupils in maths in the classroom.

The programme is designed for primary early career teachers (those in their first or second year of teaching).

MORE INFO

REGISTER INTEREST

Years 5-8 Continuity

Work Groups in this project aim to strengthen the transition from primary to secondary school by focusing on curriculum and pedagogical continuity over Years 5 to 8. Following the disruption to education caused by the Covid crisis, this transition is more crucial than ever.

A central aim is the promotion of cross phase communication between teachers to address issues of maths curriculum and pedagogical transition as distinct from pastoral considerations. A key feature will be understanding how best to prioritise key aspects of the curriculum to help ensure pupils have mastered the fundamental understanding and skills they need to underpin their progression through upper Key Stage 2 and into Key Stage 3. Participants should be teachers of Years 5 to 8 in primary, secondary, middle school and all-through schools with some responsibility for curriculum development, e.g. maths leads / heads of department. Linked 'families' of schools are encouraged to take part: ideally teachers from secondary schools and their associated primary schools will work together.

MORE INFO

BOOK Vale of WH

BOOK West Oxon

BOOK South Bucks

BOOK North Bucks

Secondary Work Groups

SECONDARY

The Maths Hub Programme has PD opportunities for all teachers at all stages in their careers and across all phases. Below is a summary of the FREE development opportunities that are on offer for secondary teachers in 2021/22. Follow the links for further details on the NCETM website or contact info@bbomathshub.org.uk to discuss the best programme for you and your department.

Many secondary Work Groups are now open for booking via our website. For those that aren't, we are asking for anyone interested in participating to fill in an expression of interest form on our website so that we can keep in touch with dates and booking details once these are released and made available.

All of our Work Groups are free.

Secondary Subject Leadership

This new project offers focused support to secondary heads of department/subject leaders, to enable them to better understand and implement teaching for mastery approaches across their department, and to develop in their role as leaders of both student learning and teacher professional development.

It provides an opportunity for participants to deepen their understanding of teaching for mastery approaches, of their wider roles, and of their capacity with their colleagues to transform secondary maths learning.The project is for secondary heads of department/subject leaders, and is open to heads of department in schools already involved with Maths Hubs and to those who are not yet involved. (Prospective HoDs/subject leaders are not eligible to participate.)

MORE INFO BOOK NOW

Years 7-11 Coherence

This project focuses on participant teachers working together to analyse, deconstruct and trace through the curriculum a selected key topic area, developing insight into effective teaching approaches, and considering the implications for longer term curriculum design. The project was previously known as Challenging Topics at GCSE, but its name has been amended to more accurately reflect the work undertaken as well as to convey the importance of curriculum coherence.

Participants should be secondary school teachers of GCSE Maths. Individuals or ideally pairs of teachers from a department participate, with an expectation that they will work with other members of their department at appropriate points. Schools that have participated in previous years may do so again, as developments often take place over time.

MORE INFO

REGISTER INTEREST

Mathematical Thinking for GCSE

The Mathematical Thinking for GCSE project is for secondary maths teachers looking for practical and theoretical elements to address their students' GCSE attainment.

The stated aims of the KS4 Programme of Study are that, through working on the content, students should develop mathematical fluency, mathematical reasoning and problem solving. While mathematical thinking is a key feature of all of these, the focus of this Work Group is to support teachers in developing their understanding of mathematical thinking as it relates to problem-solving and reasoning, using practical task types to explore what it means for students to get better at mathematical thinking and what this looks like in the classroom.

This is for teachers of KS4 who want to further develop their pedagogical and theoretical understanding of developing mathematical thinking, and practical classroom strategies to explore these ideas. Lead participants will be expected to lead developments from the Work Group in their own department and so should have the opportunity and authority to do this effectively. Departments that have already engaged with the Work Group have the opportunity to continue with the Work Group structure in order to explore further and think more deeply about supporting mathematical thinking in the classroom by participating in a second 'deepening' year.

MORE INFO

BOOK NOW

Secondary Maths MAT Leads

This project offers focused support to those who lead mathematics across multiple schools within a MAT, to enable them to better understand and develop effective maths pedagogy approaches across those schools. It will also support participants to develop their role as a leader of system change, curriculum change, and teacher professional development.

Whilst those who lead maths across a MAT are often the subject lead for both primary and secondary, the key focus for this programme is their work with secondary teachers, although consideration will be given to transition and how the different phases relate to each other. Additionally, focusing on developing skills with one phase is likely to impact positively on work with other phases. Participants will engage with a centrally-led programme offered nationally, with the potential for regional provision dependent on numbers.

The project is for those who lead maths across multiple schools within a MAT, including at least one secondary school.

MORE INFO REGISTER INTEREST

Secondary Work Groups

SECONDARY

Years 5-8 Continuity

Work Groups in this project aim to strengthen the transition from primary to secondary school by focusing on curriculum and pedagogical continuity over Years 5 to 8. Following the disruption to education caused by the Covid crisis, this transition is more crucial than ever.

A central aim is the promotion of cross phase communication between teachers to address issues of maths curriculum and pedagogical transition as distinct from pastoral considerations. A key feature will be understanding how best to prioritise key aspects of the curriculum to help ensure pupils have mastered the fundamental understanding and skills they need to underpin their progression through upper Key Stage 2 and into Key Stage 3. Participants should be teachers of Years 5 to 8 in primary, secondary, middle school and all-through schools with some responsibility for curriculum development, e.g. maths leads / heads of department. Linked 'families' of schools are encouraged to take part: ideally teachers from secondary schools and their associated primary schools will work together.

MORE INFO

BOOK Vale of WH

BOOK West Oxon

BOOK South Bucks

BOOK North Bucks

Specialist Knowledge for Teaching Mathematics – Secondary Early Career Teachers

This project is designed to support secondary early career teachers (teachers in their first two years of teaching) in developing specialist knowledge for teaching mathematics, thus enabling them to understand, teach and support students in maths in the classroom.

This programme is designed for secondary early career teachers (those in their first or second year of teaching).

The SKTM Secondary Early Career Teachers Programme project is fully funded by the Maths Hubs Programme so is free to participating schools.

At a local level, Work Groups will explore one of the following themes, focusing on designing effective learning and teaching in maths: structure of the number system, operating on number, multiplicative reasoning, sequences and graphs, statistics and probability, geometry.

Participants will work deeply on one area of maths, drawing in the associated pedagogy, and activities will include lesson analysis and lesson design.

MORE INFO

REGISTER INTEREST

Specialist Knowledge for Teaching Mathematics – Non Specialists

This programme is for non-specialist teachers of maths in state-funded schools who fit the following definition: A non-specialist teacher of mathematics is 'a teacher that is currently teaching some mathematics who has not undertaken initial teacher training (ITT) in mathematics'.

If there is sufficient space in the cohort, other teachers of maths who do not fit this definition but would benefit from this support may also participate.

The programme is aligned to the NCETM teaching for mastery pedagogy and is based on six key themes: Structure of the number system, Operating on number, Multiplicative reasoning, Sequences and graphs, Statistics and probability, Geometry.

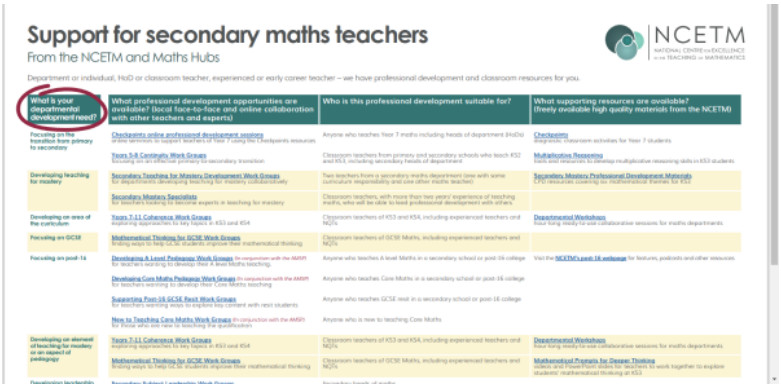
Participants will explore these themes, supported by an experienced secondary practitioner.

The NCETM has produced a flyer which summarises the programme and its benefits.

MORE INFO

REGISTER INTEREST

Click on the following for more information on secondary programmes from the NCETM :



Post-16 Work Groups

POST-16

The Maths Hub Programme has PD opportunities for all teachers at all stages in their careers and across all phases. Below is a summary of the FREE development opportunities that are on offer for post-16 teachers in 2021/22. Follow the links for further details on the NCETM website or contact info@bbomathshub.org.uk to discuss the best programme for you and your department.

All of our post-16 Work Groups are now open for booking via our website. Please use the buttons below to access the registartion pages.

All of our Work Groups are free.

Developing A Level Pedagogy

This project provides national support for the effective development of pedagogy in the teaching of A level Mathematics to support Covid recovery, to enhance the quality of teaching and the conceptual understanding of students, and the development of participants as leaders of A level teaching professional development in their own school or college. It aims to develop and sustain local communities of practice involving collaboration between teachers in developing pedagogy in their teaching of A level Maths.

The project is aimed at teachers in schools/colleges/departments that want to develop one or more aspects of their A level pedagogy to support Covid recovery. It would be suitable for existing leaders of A level teaching or experienced teachers of A level Maths who wish to lead the development of pedagogy in A level teaching with other colleagues in their own or other schools. Teachers who will find this Work Group particularly useful include those who may have already completed other A level subject knowledge and pedagogy courses (such as Teaching A level Mathematics (TAM) or Preparing to Teach A level Mathematics), and who are able to work with other colleagues in their own or other schools.

MORE INFO BOOK NOW

Developing Core Maths Pedagogy

This Work Group give teachers opportunities, through collaboration and experimentation, to develop improved teaching approaches that support the open-ended problem-solving skills Core Maths students need to develop, and to share these with departmental colleagues. Participant departments will support the role of Core Maths in promoting contextualised problem-solving and links to teaching in other subject areas.

Participants in this Work Group will be experienced and developing teachers of Core Maths. These may be teachers in post-16 settings whose main subject is maths or whose main subject is not maths. This Work Group is for schools and colleges in at least their second year of teaching Core Maths. Participants will be expected, where appropriate, to work with colleagues in their own department.

MORE INFO
BOOK NOW

New to Teaching Core Maths

The purpose of this programme is to support teachers who are new to teaching Core Maths in developing specialist knowledge for teaching Core Maths and to increase their confidence in teaching the course. The programme has a primary focus on Core Maths subject knowledge and pedagogy and will be based on these six key themes which are common to all the Core Maths specifications:

Using contextualised problem-solving, Applying Fermi estimation and modelling, Developing critical analysis, Making sense of finance, Using the pre-release materials, Exploring statistics.

Technology and online teaching will be underlying themes throughout the programme, aimed at teachers who are new to teaching Core Maths for the first time and are teaching a Core Maths class during the Autumn and Spring terms of 2021 and 2022.

MORE INFO
BOOK NOW

Supporting Post-16 GCSE Resit

Whilst this Work Group is not being offered by the BBO Hub this year, we are pleased to say that it is being run by the Matrix Maths Hub. Please note that the booking link will take you to their website.

Particular foci that will be addressed in the sessions are:

improving awareness of key concepts required to achieve a Level 4 at GCSE

- developing teaching and learning approaches to promote engagement, help students make connections and promote mathematical resilience

- addressing common misconceptions and strategies to iron them out

Teachers will be expected to try out any new ideas in between sessions (school based activities) and share results with the other teachers in the Workgroup.

MORE INFO
BOOK NOW

Other Events and Opportunities

NETWORK MEETINGS (IN ASSOCIATION WITH THE AMSP)

AMSP South will be running some online Professional Development to support teachers in their delivery and subject knowledge for AS and A level Discrete and Decision Maths. These sessions will run on 16th November, 7th of December and 18th of January and will cover, some of the following

- Graph Theory
- Graphical Linear Programming
- Critical Path Analysis
- Touring Algorithms
- Simplex
- Network Flows
- Game Theory

depending on the choices made by those who register for the course. Whilst there are 3 sessions, colleagues are welcome to register for one, two or all three depending on their needs. The link to register for session 1 is : https://amsp.org.uk/events/details/8390.

This also includes links to future sessions for those interested.

Year 12 Problem Solving Workshops start on 18th October at the Maths Institute, Oxford.

These regular classes offer students the opportunity to develop mathematical problem-solving skills through discussion and collaboration. They are designed to help students to develop strategies and confidence when tackling unfamiliar problems in maths and will help with preparations for taking advanced papers such as the MAT, TMUA and STEP examinations. Attending the sessions will greatly enrich students' mathematical experience and help them to develop a better understanding of A level Mathematics.

Places are filling fast, so please book as soon as possible to avoid disappointment. To sign up and for more information visit : https://amsp.org.uk/events/details/8760.

MASTERING NUMBER PROGRAMME

The new Mastering Number programme has been hugely successful this year and although recruitment has now closed for the first cohort, we are considering a second cohort to commence in late summer and continue into the next academic year. If you would like to express an interest in participating, please register your interest now.

MORE INFO REGISTER INTEREST

NCETM RESOURCES TO SUPPORT WITH COVID RECOVERY

Other Events and Opportunities

NATIONAL MATHEMATICS AND PHYSICS SCITT

NATIONAL MATHEMATICS & PHYSICS SCITT

Excellence in specialist teacher training

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01494 897330

www.nmapscitt.org.uk

Become a Placement School

Why host an National Mathematics & Physics SCITT (NMAP SCITT) trainee?

- As a national. subject-specific SCITT. we attract exceptionally strong candidates with an excellentlevel of subject knowledge
- Hosting and mentoring a trainee teacher offers huge benefits including the professional development ofthe mentor, the injection of new energy and ideas and a supernumerary specialist resource
- The NMAP SCITT conducts a rigorous interview process and completes screeningand other safeguarding checks for all applicants
- The NMAP SCITT offers strong support and a placement fee to cover the cost of school-based mentoring.

Please complete this form if you would like to host a trainee teacher or contact enquiries@nmapscitt.org.uk if you would like more information.

Train with us

The NMAP SCITT offers subject specialist teacher training in Mathematics and Physics. As the only school-centred provider delivering dedicated Mathematics and Physics teacher training, our programme has been developed by expert practitioners in their fields and in partnership with specialists from the Institute of Physics and the Mathematical Association.

Alongside the weekly training and a confidence-building, and immersive placement experience we offer an enviable support network to support you through your training and beyond.

You can visit our website for more information or find out how to apply here.

"The communication and support from the NMAPS team (was the best part of being a trainee)"

"The support from my mentor has been truly phenomenal" - NMAP SCITT trainees 2021

Experts in the making

School Centred Initial Teacher Training with the National Mathematics and Physics SCITT