

BCME 10 Conference Programme

23rd and 24th October 2026



This booklet lists details of all of the conference sessions based on the information submitted by the lead presenter. In the case of multiple contributors the lead presenter is listed first. Names marked * contributed to the design / preparation of the session but are not presenting at the conference. Sessions are listed according to their place in the programme, followed by a list of posters. A full list of contributors to the conference is included at the end.

As well as looking at the title and reading the abstract, consider the type of session but also check which age groups will be discussed or relevant to the content of the session. If your role is not listed in the target audience (e.g. maths tutor), look for the closest relevant role (e.g. Practitioner or Teacher). Considering all of the information provided will help you find sessions that will be relevant and interesting for you.

Entries are set out as follows:

Session number	Contributor(s) Title of session	
Type of session	Relevant age group(s)	Target audience by role(s)
Abstract		

Key to type of sessions

IWAD	Interactive workshop: Analysis & Discussion
IWEMA	Interactive workshop: Engaging in Mathematical Activity
RPS	Research-Practice Seminar
RS	Research Symposium
RT	Round Table

Table of Contents

Session One 11:00 - 11:50 Friday 23rd October	7
1.1	7
1.2	7
1.3	8
1.4a	8
1.4b	9
1.5	9
1.6a	10
1.6b	11
1.7	11
1.8	12
1.9	12
1.10	13
1.11a	14
1.11b	14
1.12	15
Session Two 13:00 - 13:50 Friday 23rd October	16
2.1a	16
2.1b	16
2.2	17
2.3	17
2.4a	18
2.4b	18
2.5	19
2.6	19
2.7	20
2.8	20
2.9	21
2.10	22
2.11	22
2.12	23
Session Three 14:00 - 14:50 Friday 23rd October	24
3.1a	24
3.1b	24
3.4a	24
3.4b	25
3.5	25
3.6a	26
3.6b	27
3.7a	27
3.7b	27
3.10	28
Session Four 15:45 - 16:35 Friday 23rd October	29
4.1	29
4.2	29
4.3	30
4.4a	30
4.4b	30
4.5a	31
4.5b	32



4.6a	32
4.6b	33
4.7	33
4.8	34
4.9	34
4.10	35
4.11a	35
4.11b	36
4.12a	36
4.12b	37
Session Five 9:00 - 9:50 Saturday 24th October	38
5.1	38
5.2	38
5.3a	39
5.3b	39
5.4a	40
5.4b	40
5.5a	41
5.5b	41
5.6a	42
5.6b	43
5.7a	43
5.7b	44
5.8	45
5.9	45
5.10	45
5.11	46
Session Six 9:55 - 10:45 Saturday 24th October	47
6.1a	47
6.1b	47
6.3a	48
6.3b	48
6.4	49
6.5	49
6.6a	50
6.6b	51
6.7a	51
6.7b	52
Session Seven 11:15 - 12:05 Saturday 24th October	53
7.1a	53
7.1b	53
7.2	54
7.3	54
7.4	55
7.5	55
7.6a	56
7.6b	56
7.7a	57
7.7b	57
7.8	58
7.9	59
7.10a	59

7.10b	60
7.11	60
Session Eight 14:05 - 14:55 Saturday 24th October	62
8.1a	62
8.1b	62
8.2	63
8.3	64
8.4a	64
8.4b	65
8.5a	65
8.5b	66
8.6a	66
8.6b	66
8.7a	67
8.7b	68
8.8	68
8.9	69
8.10	69
8.11	70
Session Nine 15:05 - 15:55 Saturday 24th October	71
9.1	71
9.2	71
9.3	72
9.4a	72
9.4b	73
9.5	73
9.6a	74
9.6b	74
9.7a	75
9.7b	76
9.8	76
9.9	77
9.10	77
9.11	78
Posters	79

Session One 11:00 - 11:50 Friday 23rd October

1.1	Dale, Chris; Dolling, Natasha Artificial Intelligence (AI) - a vehicle for maths teacher professionalism?	
RT	All ages	Practitioner, Teacher, Teacher Educator, PD Lead, SLT, System leader
The use of Artificial Intelligence (AI) continues to grow rapidly, and there is a range of evidence that AI is now being used extensively in schools. This year the NCETM has convened an AI Strategy Group to consider our organisational position on this use. The aim is to adopt and develop an ethical, evidence-based position in critically assessing whether AI can improve maths teaching through: • Recognising the pros and cons of AI use • Exploring the risks and possible mitigations • Supporting teachers in creating and critically appraising AI outputs A key part of this is examining and exploring a range of practical examples of how AI is being used through professional dialogue with teachers. Through this dialogue, a range of draft professional principles are being developed and tested. During this academic year a range of videos will be produced that exemplify such dialogue and then ground the discussion in the draft principles. The session will start with an example of a video and participants will then get a chance to reflect on this stimulus and discuss and offer thoughts and feedback. We would then want to explore and discuss participants experiences of AI in their work and critically consider the threats and opportunities exist in developing maths teachers' professionalism. The session would conclude with next steps and a discussion regarding further support that maths teachers might need moving forward in this rapidly evolving area.		

1.2	Baldry, Fay; Macmillan, Emily; Ingram, Jenni Awareness of mathematical activity: How paying attention to our mathematical actions can improve learners' experiences.	
IWAD	7-16+, FE, ITE, CPD	Practitioner, Teacher, Teacher Educator
Working in teacher education, we are interested in the levels of awareness of what mathematical actions are activated when engaging with tasks, and how this influences teaching. This is our awareness and that of teachers and student-teachers that we are working with, supporting our twofold aim of contributing to our own professional development and that of others. In this session we will work together on tasks that provide opportunities to move beyond a focus on the particulars of the examples, to more general ways of mathematical thinking. During the discussion phases, a systematic approach will be taken to explore what we are aware of and attend to, based on the Discipline of Noticing (DoN) by John Mason (2002). This structure will include the use of 'accounts of', to describe what has been noticed, and 'accounts for', the subsequent interpretations. The key step, however, is that these points of reflection provide the choice to act in a new way in the future; in other words, has awareness brought the opportunity to change? In this context, is a focus on shifting from the particular to the general raising awareness of actions that we, as teachers, could take, so learners can access these		

mathematical ways of thinking. Through the DoN, a reflexive relationship between theory and practice will form an integral part of this session.

1.3	Griffiths, Rose; Gripton, Cath; Marks, Rachel Supporting the mathematical learning of children in care	
IWAD	3-16; Alternative provision, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, Learning Support, PD Lead
This session explores the challenges children in care can experience when learning mathematics. Presenting case studies of two primary-aged children, we discuss clinical interview (Ginsberg, 1997) as a process for getting to know children's mathematics and better understand the teaching that will support their mathematics attitudes and attainment before the transition to secondary school. We draw upon observational and interview data with children in care and their teachers, school leaders and foster carers to illuminate how disrupted school experiences of mathematics, caused by trauma, loss, absence, school transfer and instability, may lead to specific challenges due to the hierarchical nature of learning mathematics. We illustrate how gaps and insecure knowledge bases can be obscured by the coping strategies of children in care, and can have an ongoing impact on their beliefs about mathematics and themselves as a mathematician. In addition, it will point to the risk of sympathetically low expectations, inconsistent support and assumptions about children's 'ability' in school. We argue for the critical role of teacher engagement, assessment, and coherence between home and school for mathematics, making suggestions about professional development which might support teachers of primary-aged children in care. We point to the potential of particular types of mathematics activities – which we will explore in the session – alongside clinical interview, to support diagnostic assessment and the development of positive attitudes, working towards securer foundational understanding. We suggest that these could form part of a bespoke relational approach to mathematics teaching for children in care.		

1.4a	Cripwell, Jon Lesson design as the missing link between curriculum intent and problem solving in mathematics lessons	
RPS	3-16	Practitioner, Teacher, Teacher Educator, Researcher, SLT, PD Leads, Curriculum Developer
In recent years, problem solving has been positioned as a central aim of the primary mathematics curriculum. Yet in many classrooms, pupils' experiences of problem solving remain inconsistent, episodic, or overly dependent on task choice alone. This session argues that the design of lessons themselves – not just the selection of "rich" tasks – plays a critical role in shaping pupils' access to and success in mathematical problem solving. Drawing on evidence from cognitive science, research on mathematical learning, and professional learning work with teachers and maths leaders, this session explores lesson design as a professional act. It considers how decisions about sequencing, representation, variation, and classroom talk influence pupils' opportunities to connect ideas, build schemas, and engage meaningfully with non-routine problems. Particular attention is given to the relationship between		

fluency, reasoning, and problem solving, and to the risks of conflating these domains within lesson planning.

The session will use concrete examples from classrooms to illustrate how small design choices within lessons can either support or undermine pupils' problem-solving development over time. Rather than proposing a single model or template, the paper offers a set of design principles intended to support teachers and leaders in making more intentional, coherent decisions when planning for problem solving across a sequence of lessons.

The contribution aims to bridge research and practice by reframing problem solving not as an add-on or outcome, but as something shaped deliberately through thoughtful lesson design.

1.4b	Rowlandson, Paul Developing a framework for analysing sets of mathematical practice questions	
RPS	9-16	Teacher, Researcher, SLT, Curriculum Developer
This Research Practice Seminar presents work in progress that seeks to develop a framework for analysing the design of mathematics practice problem sets encountered in everyday classroom teaching. While a substantial body of research has examined the design of individual questions or tasks, less attention has been paid to how practice questions operate collectively when organised as a set, despite the centrality of such sets to teachers' lesson planning. Previous research from cognitive science has explored the sequencing of practice questions, most notably through comparisons of blocked and interleaved practice. However, the question sets employed in these studies are often highly constrained and bear little resemblance to those published for use in English schools. Building on the presenter's previous research, which demonstrated that interleaving effects reported in cognitive science diminish when experimental constraints are relaxed, this seminar argues for the importance of attending to practice sets that more closely resemble classroom realities. The current project explores multiple dimensions along which mathematics practice problem sets may vary in their design, including concept coverage, connectedness between questions, and the presence of a difficulty gradient. The seminar will outline how these dimensions are being conceptualised and discuss emerging approaches to analysing practice materials empirically. By regarding practice problem sets as objects of study, this research aims to provide theoretically grounded tools that may support teachers in selecting and interpreting practice resources. Participants will be invited to reflect on these dimensions and contribute questions and critiques that may inform future development of this research.		

1.5	Pescetelli, Rita Beyond the Numbers: Addressing Inhibitory Control and Word Problem Barriers for ADHD Learners	
IWAD	11-16, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, PD Lead, Curriculum Developer

Supporting neurodivergent learners is both a profound social justice imperative and a vital practical necessity for time-pressed secondary mathematics teachers. This workshop focuses on the importance of supporting students with ADHD-related characteristics in secondary mathematics classrooms, bridging the gap between neurocognitive theory and classroom practice. Grounded in my dual identity as a senior leader in Alternative Provision (AP) and a doctoral researcher, this workshop translates pilot study findings into actionable strategies for mainstream classrooms, emphasising enhanced access to word problems for KS3 and GCSE students. The pilot data identifies two core barriers: linguistic reasoning issues, such as lexical ambiguity and implicit language, and executive function impairments, specifically poor inhibitory control and numerical over-reliance.

In this hands-on session, participants will engage in a collaborative critique of three real-world classroom scenarios to evaluate literature-informed, ‘low-effort/high-impact’ strategies. We will focus on the scalability of these interventions in the high-stakes reality of busy mainstream departments, ensuring that neurodiversity-affirming approaches are both ethically sound and practically feasible.

To bridge the gap between theory and classroom practice, we will address key reflective questions:

- What specific linguistic barriers are triggering student disengagement?
- How can we adapt tasks to promote sustained reasoning without increasing your planning workload?

Attendees will leave with a practical framework for identifying these subtle neurocognitive barriers and a toolkit designed to foster sustained mathematical reasoning for all learners, moving beyond simple procedural survival to genuine conceptual engagement.

1.6a	McGill, Shauna; Oldham, Elizabeth; *Lorraine Harbison One task, multiple enactments: cross-border fractions reasoning in two primary classrooms	
RPS	7-11; UG, PG, ITE, CPD	Teacher, Teacher Educator, Researcher, PD Lead, Mentor/Coach
We examine two contrasting enactments of the same fractions reasoning task by two primary teachers, one in Northern Ireland and one in the Republic of Ireland. The task formed part of a cross-border, lesson-study-informed professional development cycle, designed as a partnership between researchers and teachers, and was introduced with an explicit emphasis on mathematical reasoning, while also affording opportunities to practise fraction computations. Building on work showing that tasks are always adapted rather than simply adopted in classrooms, we were interested in how this emphasis on reasoning was realised in these two contexts. We do not claim these cases are representative of practice in either jurisdiction; rather, we use the cross-border setting to frame a comparison of how two teachers worked with a shared task. We analyse video of both lessons alongside the teachers' post-lesson reflections on task and example sequences, and on how their choices shaped pupil participation and inclusion. Our specific focus is on the opportunities that were created, elaborated, constrained or extinguished for reasoning about fractions.		

In the session, we will first share our motivations for focusing on fractions reasoning across both jurisdictions, which vary in how they specify fractions learning outcomes while commonly emphasising the importance of reasoning. We will then work with participants on selected excerpts from our data that shed light on these two teachers' interpretations of what it means to support reasoning through tasks and interactions in primary classrooms.

1.6b	Oughton, Rachel; Dixon-Jones, Sarah; Nichols, Kathryn; Darwin, Sophy Young Minds Big Maths: collaboration of early years experts and university mathematicians	
RPS	0-5, adult, UG, PG, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, PD Lead
Young Minds Big Maths (YMBM) is an ongoing partnership between early years (EY) educators (mostly working with children aged 3-4) and university mathematicians. The EY educators and mathematicians meet together regularly to discuss the interests and activities of children in each setting. Together, the group highlight the mathematical thinking taking place, clarify the key mathematical concepts and discuss related ideas. The EY educators then use their extensive, practice-based knowledge to decide which ideas to introduce into the setting, and when and how. The goal is to equip EY educators for child-led, playful, exploratory maths. YMBM began in 2020 when EY educators at Houghton Community Nursery School asked mathematicians at nearby Durham University if they would consider working together to help them enrich practice. It has since grown to include 20 EY settings, with groups meeting every half term. EY educators involved have said that they have been able to further children's learning by introducing vocabulary and ideas that they wouldn't previously have thought to, and have expressed surprise at the capacity and appetite of the children to engage with new mathematical ideas. Several have described a change in their own attitude to maths, feeling more confident to engage in mathematical explorations with the children. In this session we will discuss YMBM in more detail, with perspectives from EY educators and mathematicians, and give examples from settings of how discussions in YMBM meetings led to mathematical ideas being explored in more depth in settings.		

1.7	Chair: Wright, Pete Mio, Christina; Kaur, Balbir; Goodland, Jane; Parkes, Sam Promoting Socially Just Mathematics Teaching	
RS	5-16+, FE, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, System Leader, Consultant, PD Lead, Mentor/Coach
This research symposium will provide an opportunity to engage with, and discuss, findings from the Promoting Socially Just Mathematics Teaching (PSJMT) research project (funded by the BERA Small Grants Fund 2024/2025). This project set out to explore how mathematics teacher educators can promote socially just pedagogies and practices amongst the pre-service and experienced teachers they work with in ITE, primary and secondary schools in England and Scotland. We adopted a participatory action research methodology, collecting data from focus		

group discussions with teacher educators and interviews with teachers, using thematic analysis to analyse the transcripts. Further details and research outputs from the project, including a series of freely downloadable professional development workshops, are on the Teaching Maths for Social Justice Network (TMSJN) website: www.mathsocialjustice.org/research/

The Chair will present the framework for socially just mathematics teaching that provided the context for the project and emphasise the participatory and collaborative principles that underpinned all aspects of the research design. Other members of the research team will present our findings including: constraints and opportunities that teacher educators face in promoting socially just teaching; the impact of the professional development workshops we developed on participating teachers; the features of the workshops that were most valued by teachers (e.g. critical reflection on practice, questioning views about mathematics, challenging discourses that permeate mathematics education). The project highlighted the effectiveness of encouraging broader engagement with socially just mathematics teaching through focusing initially on issues of significant interest to teachers, e.g. inclusion, engagement, problem solving.

1.8	Cooper, Joe; Donaldson, Becky Beyond favourite pets: choosing meaningful data for secondary maths	
IWAD	11-16, ITE	Practitioner, Teacher, Teacher Educators, System Leader, Curriculum Developers
Students encounter data constantly, yet often their experience of statistics in school is limited to sanitised examples that mask the complexity of statistical reasoning. Do students have enough opportunity to explore real-world data and to evaluate what conclusions can legitimately be drawn? Which data sets stimulate curiosity and rich mathematical discussion, and which risk obscuring the mathematics through complexity or controversy? Statistical literacy is essential if students are to engage critically with the data they encounter throughout their lives, from traditional and social media to education, health and financial decision-making. This workshop explores how secondary mathematics teachers can support students to develop a robust statistical lens through the thoughtful use of real-world data. Using classroom-ready activities and authentic data sets, we consider how statistical concepts can be made accessible without obscuring the underlying mathematics. Participants will explore the dilemmas teachers face when working with real data: when messiness deepens understanding and when it distracts; how and when data might be curated to illuminate key ideas; and how to sensitively use contemporary contexts, including medical data. We will also discuss how subtle statistical phenomena, such as Simpson's paradox, can be meaningfully introduced within curriculum and assessment constraints. The session invites teachers to reflect on the data students currently encounter and how we can better prepare them to discern between evidence, misrepresentation and misinformation, supporting them to make informed and responsible life choices.		

1.9	Nikitin, Oxana Same Maths, Different Voices: Using Oracy to Deepen Mathematical Thinking	
IWEMA	Post 16/FE, adult, alternative provision	Practitioner, Teacher, Teacher Educator, Learning Support, PD Lead
This interactive workshop explores the role of oracy in developing mathematical reasoning, with a particular focus on post-16 and GCSE resit learners who often experience low confidence and disengagement. It addresses the need for approaches that move beyond procedural answer-getting towards explanation, justification, and conceptual understanding. The session is informed by research on Teaching for Mastery (NCETM), dialogic teaching (Robin Alexander), and growth mindset (Carol Dweck), which highlight the importance of language and interaction in learning. These principles have directly shaped the design of structured talk routines, including the use of variation, purposeful questioning, and sentence stems to scaffold reasoning and participation. In doing so, the workshop demonstrates a clear partnership between research and practice. Rather than introducing additional content, the approach focuses on deepening engagement with existing curriculum through structured discussion. Designed for Further Education contexts with learners aged 16–19, the workshop presents strategies proposed to support inclusive participation and make thinking visible. Key routines include Always, Sometimes, Never and Convince Me / Prove Me Wrong, supported by teacher “talk moves” to challenge misconceptions. Participants will actively engage in these activities, reflect on their impact, and design tasks for their own contexts. Attendees will leave with a set of practical routines, question structures, and scaffolds that can be immediately applied in their classrooms. The workshop offers a practical and transferable framework for embedding oracy within mathematics teaching, bridging theory and practice in meaningful and sustainable ways.		

1.10	Chair: Noyes, Andy Hodgen, Jeremy; Owens, Emma; Chun-Yeung Lee, Gabriel; Woollacott, Bethany; Szatkowski, Lisa Mathematics education in Year 8 in England: insights from RoME 26	
RS	11-16	Practitioner, Teacher, Teacher Educator, Researcher, SLT, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
Key Stage 3 mathematics is widely acknowledged to be a problem. The improvements in primary mathematics over recent decades have not been matched in KS3, which is associated with a growing attainment gap between the most and least disadvantaged pupils and between the lowest and the highest attainers. Hence, understanding pupils’ experiences of mathematics in KS3 is crucial to improving mathematics education. This session will present for discussion highlights from the Observatory for Mathematical Education’s secondary cohort study, in particular the first two years of KS3: Year 7 (2024/5) and Year 8 (2025/6). Our secondary cohort dataset consists of a large and nationally representative		

sample of c. 150 secondary schools including surveys of c. 27,000 pupils, teachers (N=1043) and Heads of Mathematics (N=141) together with case studies of schools (N=15) drawn from the wider sample.

We will present findings relating to pupils' attitudes towards mathematics teaching and learning, how these vary by prior attainment, sex and socio-economic status attitudes and how these change over time. Our Y7 evidence indicated that, across our sample of schools, very limited lesson time was devoted either to ratio and proportion or to problem-solving, despite both being National Curriculum priorities. We will report on the extent to which this changed in Y8. We will report on who is teaching mathematics in KS3; how schools plan and manage mathematics education in KS3; and the views of parents. The implications of our findings for current and future reforms, including the Curriculum and Assessment Review, will be discussed.

1.11a	Tierney, Nicola Critical Mathematical Dispositions: It matters what we communicate about maths and being mathematical.	
RPS	5-16+, FE, ITE	Teacher, Teacher Educator, Researcher, SLT, PD Lead, Curriculum Developer
This session explores whether and how what is communicated about mathematics and being mathematical in primary classrooms allows children to develop a Critical Mathematical Disposition (CMD). I define CMD as possessing a sense of mathematical agency and authority, and the willingness and curiosity to use these to engage with and challenge mathematical ideas, approaches and claims. As we navigate an age of big data and mathematically driven technologies, CMD development is essential for full and informed participation in society. This critical realist research involved observing and interviewing three primary maths leads, alongside documentary analysis of planning, student work and policy documents. The data collected has allowed analysis of how CMD attributes are developed (or restricted) through multiple communication channels: oral and written interactions in lessons, task selection and allocation, classroom organisation, school policy and school and national curricula. Examples will show that by understanding patterns of communication across settings, a view of how primary students are positioned in relation to mathematics and being mathematical emerges and that this is conditioned, but not fully determined, by the structures which guide and inform teachers' practices. If these findings are indicative of patterns elsewhere, then greater attention to how the nature of mathematics and mathematical knowing and doing is communicated in schools is needed. I argue that teacher (initial and continuing) education should consider how the interaction between structural constraints and teacher agency can be leveraged so that learners can be better supported to develop a genuinely critical mathematical disposition.		

1.11b	Wallis, Rachel Multiplicative reasoning through measurement: insights, affordances and implications	
RPS	3-9, alternative provision, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Consultant, Curriculum Developer
Reasoning with the multiplicative relationship is widely recognised as central to mathematical progress and, in the UK, is often developed in the primary years using manipulatives and images based on grouping discrete objects. Building on previous international research that explores teaching the multiplicative relationship through measurement, this presentation reports on findings from two design research projects conducted in partnership with three primary schools in Wales. The projects involved the development, implementation and analysis of learning tasks designed to support multiplicative reasoning through measurement contexts (length, mass and capacity). These tasks were implemented with Year 2 and 3 learners working with continuous quantities, where counting discrete objects was either restricted or impossible. Working in partnership with schools, through interview and analysis of learner responses, the researcher sought, ensuring appropriate consent and confidentiality, teacher and learner experiences and insights. Findings indicated strong potential for these tasks to provide rich and engaging opportunities for developing multiplicative reasoning and understanding of measurement. These insights informed the development of a set of teaching materials that can be integrated into Year 2 and 3 curricula in the UK. The presentation will provide a brief overview of the projects, sharing tasks and key findings in the form of insights, affordances and possible implications for using these learning tasks, or similar approaches, in future practice.		

1.12	Hawkins, Jane; Perring, Richard Developing communication in maths classrooms	
IWEMA	9-16+, FE, alternative provision, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
This interactive session will consider ways in which teachers can purposefully develop intentional communication in maths classrooms. Participants will have an opportunity to work together on some of the newly released NCETM Year 9 Checkpoint tasks as a vehicle for considering the interplay between task, talk and intention. Checkpoints are diagnostic tasks designed to find out what pupils know, and how they know it. Our conjecture is that the way in which Checkpoints are offered, by teachers to pupils, and the prompts and responses used, will vary depending on teachers' intention and therefore significantly impact pupils' experience. In this session we hope to explore these nuances and complexities.		

Session Two 13:00 - 13:50 Friday 23rd October

2.1a

Ingram, Jenni; Macmillan, Emily; Baldry, Fay

Talking about symbols: connecting talk, symbols and meaning

RPS

9-14, ITE, CPD

Teacher, Researcher

There are several key symbols that are widely used in school mathematics, such as = or -, that are used to carry a range of mathematical meanings. When we read these symbols out loud, there is a choice over which words or phrases we use, and some of these choices can draw attention to particular meanings, whilst others are more ambiguous. In this session we will explore some of these choices and their implications for learning. We also report on a survey used in professional development contexts that explored the different words teachers used when talking about =, reflecting on the role of the mathematical context, the structure of the expressions in which the symbols appear, and the distinctions being made through the choices of words and phrases used.

2.1b

Smith, Cathy, Kimber, Elizabeth

Articulating the complexity of relationships in motion graphs

RPS

11-16+, FE, ITE, CPD

Practitioner, Teacher, Teacher Educator, Researcher,
Mentor/Coach

Teachers and students bring mathematical meanings into being through communication about mathematics classroom activities and representations. This can be supported through oracy so that students both learn to talk and learn through talk. For motion graphs, communication can also involve describing the real-life situation that is being modelled by the graph, adding further potential complexity to the classroom discourse. Our research has used linguistic tools to study word choices and patterns - not necessarily deliberate, but culturally developed - to trace the emergence of meanings in classroom interactions, specifically in this context for distance, time and speed.

In this session we will share some transcript data from a Graphing Story activity undertaken by Year 10s. We will show the tools we have used to analyse this data in order to account for the meanings made available through in-the-moment choices of what to say, or what not to say, and how to say it.

We will highlight how teacher and student speech in an extended discussion about a graph portrays various relationships between quantities (e.g. speed), properties (e.g. quick, steep), mathematical and real-world objects and phases of activity (of humans and graphs). Patterns in this speech help to build up and organise meanings of multiple connections related to distance, time and speed and their graphical representations. We argue that patterned use of informal but flexible choices of words and phrases, supported by the teacher, helps to organise and develop precise mathematical meanings.

2.2	Wheelhouse, Vicky; Hopper, Alison Finding the familiar in the unfamiliar	
IWEMA	9-16	Practitioner, Teacher, Teacher Educator, PD Lead
When tackling an unfamiliar problem, how can we support students to identify its mathematical structure? Can representations help students see the connections between what they are learning now and what has come before? Can the apparent complexity of a problem be reduced through understanding the mathematical structure, aided by a helpful representation? In this session, Alison and Vicky will explore different representations, how they appear across Key Stages 2 to 4 and how they can aid students in identifying the familiar in the unfamiliar.		

2.3	O'Brien, Dan; Rumbelow, Michael; Li, Shuhui; *Liu, Bohan; *Huang, Liying Using Extended Reality (XR) to Support 3D and Embodied Mathematical Sense-Making in the Classroom	
IWEMA	3-16+, FE, UG	Practitioner, Teacher, Teacher Educator, Researcher, Learning Support, Curriculum Developer
This workshop offers participants interested in primary and secondary mathematics education hands-on experience with Extended Reality (XR) tools (i.e., virtual and augmented reality) to stimulate new ways of thinking about three-dimensional mathematical ideas. It builds on previous XR workshops facilitated by the authors, incorporating feedback from both teacher and researcher participants feedback and introducing new resources accordingly. We hope this, along with the planned activities and discussions, serves to strengthen connections between classroom practice and educational research in a fun and innovative way. Using free XR mobile apps and tools from simple Google Cardboard 360 viewers for Android phones to tablets and interactive Meta Quest headsets, participants will explore curriculum-aligned activities that support development of geometric vocabulary (early primary), spatial visualisation (upper primary towards secondary), and embodied proportional reasoning and understanding of fractions (secondary). The workshop tasks pair familiar classroom resources - such as multilink cubes, modelling clay and tin cans - with XR constructions. Participants will receive digital and printable task sheets, AI-translated versions for multilingual classrooms and concise how-to videos. The workshop facilitators have between them experience of using XR to teach mathematics at primary, secondary and university level, as well as carrying out doctoral research on the potential of XR in education, including developing innovative and immersive XR games for learning mathematics. PARTICIPANTS SHOULD BRING A SMARTPHONE OR TABLET - all apps will be downloaded during the session. The session aims to cultivate a collaborative community for ongoing resource-sharing and reflective dialogue.		

2.4a	Knight, Gill Learning Through Observation	
RPS	CPD	Teacher Educator, SLT, System Leader, Consultant, PD Lead, Mentor/Coach
How can the observation of a more experienced other become a valuable, developmental learning opportunity for in-service teachers? What strategies can be put in place to ensure maximum teacher learning? Lesson observations are a powerful tool for professional growth, learning and development yet serving teachers all too rarely have the opportunity to observe and discuss lessons in a structured way as part of their ongoing professional development. In this session I will draw first on my own experience of observing maths teaching in Shanghai and my subsequent experience of teaching demonstration lessons for others both in my own school and those I now support. Research undertaken for my MSc in Teacher Education enabled me to develop strategies to optimise the teacher learning from an observed lesson. Since completion of my MSc I have continued to develop my practice and drew on this practitioner research to inform my contribution to the chapter on learning through observation which will be published in <i>Educating the teacher educators – who, what, how and why</i> by Bloomsbury in January 2027. I will outline the challenges presented by this form of professional development and strategies I have developed to address these. There will then be the opportunity for others to share their own experiences and to discuss ideas for refining this process as a way of prompting teacher learning.		

2.4b	Trubridge, Nicola; Evans, Sue; Townsend, Viv Working inside large scale trials: What the NCETM learned from two EEF funded RCTs	
RPS	CPD	Teacher Educator, Researcher, SLT, System Leader, PD Lead, Curriculum Developer
This research–practice seminar examines the NCETM’s experience as a programme developer and delivery partner in two major Education Endowment Foundation randomised controlled trials (RCTs): the Mastering Number at Reception and KS1 effectiveness trial (evaluated by NFER) and the Specialist Knowledge for Teaching Mathematics (SKTM) Secondary Non specialist Teachers Programme efficacy trial (evaluated by Sheffield Hallam University). Together, these trials involve hundreds of schools and thousands of pupils, offering a valuable opportunity to understand how large scale independent evaluations intersect with national professional development design and implementation. Rather than reporting trial outcomes, the session focuses on what the NCETM has learned from participating in the research process itself. We will explore the practical realities of supporting fidelity of implementation at scale, navigating school recruitment, aligning programme theory with evaluator requirements, and working within the constraints and opportunities of		

randomisation. Particular attention will be given to the collaborative relationships between the NCETM, external evaluators, Maths Hubs, and participating schools, and how these partnerships shaped both delivery and organisational learning.

Emerging themes centre on the processes of large scale evaluation: establishing clear and communicable mechanisms of change; supporting non specialist teachers and Reception teachers within tightly defined research protocols; negotiating the balance between programme integrity and school realities; and understanding the demands placed on delivery teams when engaging deeply with independent evaluators. The seminar will invite participants to reflect on how organisations can prepare for involvement in RCTs and how research–practice partnerships can strengthen programme design, professional development, and the wider evidence base in mathematics education.

2.5	Borthwick, Alison; Trundle, Ruth; Burke, Stefanie Final Report of a Research Study in England and Jersey: The impact of the teaching of multiplication and the multiplication tables check (MTC)	
IWAD	7-11, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Consultant, PD Lead, Curriculum Developer
While the MTC is statutory for Y4 pupils in England it is not for children in Jersey. As a research team representing both countries, we were therefore keen to understand if the inclusion of the MTC had a positive impact on those pupils who take it in England, in terms of their understanding of multiplication, compared to pupils in Jersey who do not have the MTC. The data collected revealed challenges within the teaching and learning of multiplicative reasoning across both jurisdictions. This session will offer you the opportunity to engage with the 10 questions that 1045 children from 37 schools completed, review the questionnaires from teachers and pupils, and discuss possible implications from our findings for all stakeholders. We will explain our rationale for the pupil questions we wrote and share our thinking about why we also felt it important to seek information from pupils and teachers (via questionnaires) on both practice and attitudes. Those who attend will also receive a PDF of the final report (published June 2025). This session links very closely with the study on ‘Tasks not Tests: understanding the different structures of multiplication and division’.		

2.6	Chair: Eastaway, Rob Briggs, Tom How history can enrich maths lessons	
RS	11-16	Practitioner, Teacher, Teacher Educator, Curriculum Developer

Bringing history into mathematics classrooms - or maths into history lessons - can enrich both subjects. Many of today's mathematical tools were spurred by the need to solve real world challenges in the past. For example logarithms were first developed as an aid to faster calculation, while probability theory emerged from a desire to understand how to win betting games in Early Modern Europe. Drawing on research with Key Stage 3 classes and experiences linking maths to the GCSE Elizabethan History curriculum, Tom Briggs and Rob Eastaway will explore some of the opportunities to deepen understanding and enjoyment of a range of mathematical topics.

Participants will learn about practical strategies for using history to teach maths, helping students see numbers as part of real human stories shaped by curiosity and practical needs. The session also introduces a new network for teachers interested in connecting maths and history, offering classroom resources, examples, and opportunities for collaboration.

2.7	Goodland, Jane A workshop on codesign in secondary mathematics: limits, co-creation, emotion and chaos	
IWAD	11-16	Practitioner, Teacher, Teacher Educator, Researcher
My project is founded on principles of social justice in secondary mathematics classrooms, acknowledging the inequalities and oppression within mathematics education. It aims to challenge the constraining mathematics learning experience by involving students in the design of their lessons. I worked with two of my own classes of low-attaining students aged 14-15. Following a framework inspired by Paulo Freire, students identified problems preventing them from succeeding or enjoying mathematics (for example, pedagogies, seating plans, tests, teacher's behaviour). We took time to explore these problems on a personal and emotional level, and also in relation to structural inequalities and underlying injustices (conscientisation). We then made changes together to try to address the problems (codesign). The power of this project lies in its open-ended nature as conscientisation and codesign can occur in unexpected ways. If a dialogic space can open up between teacher and students, there is the potential for new perspectives and ideas which can challenge the limits that constrain us. The best way to share this project is for you to experience it for yourself. In this workshop I will guide us through our own version of the project and you will encounter some of my findings first-hand. We will look at the role of emotion throughout the process, how we position ourselves in relation to the limits surrounding us, and the difference between co-option and co-creation. We will also experience the chaotic and open-ended nature of codesign as it disrupts our ideas and practices to create opportunities for change.		

2.8	Williams, Helen; Walsh, Glenda Playfully learning mathematics	
IWAD	0-9, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, PD Lead, Curriculum Developer, Other

How can young children develop positive relationships with mathematics through playful experiences? This interactive workshop explores playfulness as a powerful pedagogical approach for supporting early mathematical learning, engagement and understanding.

Drawing on research exploring how teachers and children conceptualise and experience playfulness in classrooms (Walsh et al, 2026), the session will consider how mathematics can be developed through curiosity, exploration, interaction and meaningful problem-solving rather than being separated from playful learning.

While play is often associated with early childhood, the workshop will explore the broader idea of pedagogical playfulness: how practitioners prepare, respond and make professional decisions that create opportunities for children's mathematical thinking to emerge. The session will examine the balance between intentional teaching and children's agency, highlighting the importance of practitioner knowledge, observation and responsiveness.

The workshop will introduce the SPARC framework, identifying five interconnected dimensions of playfulness - Spontaneity, Purposefulness, Active engagement, Relational connection and Curiosity - and consider how these can support children's mathematical confidence, creativity, collaboration and deeper understanding.

Through discussion, video examples and reflective activities, participants will explore how guided play and playful approaches can strengthen early mathematics teaching, and how professional learning can support practitioners in creating rich mathematical experiences for young children.

2.9	Tate, Brook; Hamilton, Caroline Multicolour Maths - How art and creativity can impact students' relationship to mathematics	
IWEMA	3-16, adult, alternative provision, CPD	Practitioner, Teacher, Teacher Educator, Researcher, Learning Support, PD Lead, Curriculum Developer
Multicolour Maths (MCM) is a creative approach to mathematics that emerged from a personal transformation in my own relationship with the subject. After years of fear and disengagement, I developed a way of representing numbers and calculations through colour and shape. This process led not only to improved understanding, but to a genuine appreciation of mathematics as something connected to art, pattern, and the wider world. Since then, I have shared MCM with primary-aged learners, teachers and communities across the UK, India and Nepal. I have collaborated with National Numeracy and I am in the process of developing lesson plans with Caroline Hamilton and Rethink Maths. The work has evolved through an ongoing dialogue between practice and response: workshops, classroom trials, and informal exchanges with learners have shaped the development of the method. MCM is grounded in ideas such as Dual Coding Theory and the Picture Superiority Effect, and is an authentic response to of maths anxiety. By engaging learners in painting, drawing and tactile making, the approach offers an alternative pathway into number for those who thrive in creative subjects or who struggle with traditional methods.		

Data collection combines qualitative reflections, student artwork and feedback, alongside an ongoing small-scale quantitative trial with Year 3 and 4 pupils focusing on multiplication. Early observations suggest increased engagement, confidence, and willingness to explore mathematical ideas.

The session will include an interactive workshop, and an invitation to consider how creative practice might broaden participation and reshape how mathematics is experienced in the classroom.

2.10	Chair: Noyes, Andy Brignell, Chris; Joubert, Marie; Lee, Stephen; Norris, Jennifer A level mathematics education in England: insights from RoME 26	
RS	Post 16/FE, UG	Practitioner, Teacher, Teacher Educator, Researcher, SLT, System Leader
As compulsory education ends, A level Mathematics and A level Further Mathematics (ages 16-18) give the first opportunity to see which pupils have chosen to stay within advanced mathematics. At this point the cohort becomes imbalanced with respect to gender, ethnicity and socio-economic status, with some gaps expanding further by the time of university enrolment. Understanding pupils' experiences of mathematics in 16-18 education gives insights into why students choose particular pathways. This session will present highlights from the Observatory for Mathematical Education's advanced cohort study, tracking the attitudes of 7,000 A level Mathematics pupils through Year 12 in 2024/25 and Year 13 in 2025/26. The cohort study includes 11-18 schools (N=75) and 16-18 colleges (N=40) and surveys of teachers (N=460) and Heads of Mathematics (N=40) together with case study institutions (N=5) drawn from the wider sample. We will present findings relating to student confidence and enjoyment, and their perceptions of the nature of mathematics and A level Mathematics teaching, and how these vary by sex, prior attainment, schools vs colleges, and whether students are also studying A level Further Mathematics. These findings will then be linked to post-18 plans for study and work, and the extent of mathematics within these plans. We will also report the views of Year 13 A level Mathematics teachers on their pedagogical practice, and the findings from lesson observations in case study institutions. The implications of our findings, including potential reforms of 16-18 pathways and the transition to HE mathematics, will be discussed.		

2.11	Berry, Miles Liberator: Visual Functional Programming as a Bridge Between Secondary Mathematics and Computer Science	
IWEMA	11-16+, FE, ITE, CPD	Teacher, Teacher Educator, Researcher, Consultant, PD Lead, Curriculum Developer
Secondary mathematics and computer science share deep conceptual foundations, functions, mappings, composition, and transformation, yet these connections are rarely made explicit in the		

classroom. When programming is taught, it tends to follow an imperative paradigm that emphasises sequencing and state change, concepts with little resonance in mathematical thinking. Liberator is a browser-based visual programming environment that takes a different approach, grounding computation in the mathematical notion of a function machine: inputs flow in, a process transforms them, and a result flows out.

Built on Haskell's functional model, Liberator allows users to construct programs by connecting nodes on a canvas rather than writing code. Each node represents a value or function; wires between them represent application and data flow. The environment supports core functional concepts, higher-order functions, list processing, function composition, and lambda expressions, all expressed through a visual interface that requires no prior programming experience to explore.

This session demonstrates how Liberator can be used in secondary mathematics to make abstract ideas tangible. Attendees will see how concepts such as domain and range, composite functions, and sequences map directly onto functional programs built live on screen. The tool is free, runs in any browser, and needs no installation. Whether you teach GCSE or A-Level mathematics, or simply want to strengthen cross-curricular links with computing, Liberator offers a low-barrier entry point into a paradigm that mirrors the way mathematicians already think.

2.12	Pope, Sue; Lam, Tung Ken Using origami in the mathematics classroom	
IWEMA	7-16, adult, ITE, CPD	Practitioner, Teacher, Teacher Educator, Curriculum Developer
Origami is an accessible starting point to explore many aspects of mathematics. Folding paper can help learners to develop understanding of symmetry, equal division of lengths and angles including bisection and trisection, fractions, similarity and much more. This will be a hands-on practical workshop where participants will work together.		

Session Three 14:00 - 14:50 Friday 23rd October

3.1a Edmiston, Alan **Some thoughts on inclusive practice in mathematics**

RPS	7-14	Practitioner, Teacher, Teacher Educator, Researcher, Learning Support
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Origin Maths Hub have been supporting teachers to explore what an inclusive maths classroom looks and sounds like. This session will outline some principles behind the design of inclusive maths lessons based upon the PhD research in science of Alan Edmiston.

3.1b Skelton, Jo; Forde, Jennie **Supporting multilingual (EAL) learners in the primary TfM mathematics classroom**

RPS	3-11	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
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Recent mathematics education research has recognised the potential benefits of using languages as a resource when teaching multilingual learners. Although in England, teaching is undertaken through the medium of English, the use of multilingual pedagogies can support learners to access their mathematics learning at an age-appropriate level, even when their proficiency in English is more limited. This session presents the work of a Research and Innovation Workgroup, run by the BBO maths hub, in which primary and early years teaching staff trialled and evaluated a range of multilingual pedagogical strategies. These strategies include translanguaging, using CPA and structure as a frame for making cross-linguistic connections and developing comprehension for solving word problems. These pedagogical approaches have been collated into a toolkit, published on the BBO website, in which a series of case studies are used to illustrate each of the strategies. In this session, we will present the first draft of this toolkit, giving an overview of the key strategies used and the associated case studies. We will then present our initial analysis of the perceptions of teachers trialling the strategies, gathered through semi-structured interviews. These findings provide insight into how session participants might use the toolkit in their own classroom settings.

3.4a Kerrison, Lois **Making it real: The use of research and practice in partnership to understand and develop the teaching of mathematics using real-life context.**

RPS	11-16+, FE	Practitioner, Teacher, Teacher Educator, Researcher, SLT
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The aim of this study was to develop a framework in which real-life context can be used to create an environment of discussion and learning to improve student outcomes. Chapman and Dickinson discuss the benefits of using real-life context and discussion-based learning, though Jablonka and Palm discuss the issue with unfamiliarity of real-life context in the classroom. My study began in a coastal comprehensive school of approximately 1500 students aged between 11-16 where I was the head of mathematics. I continued my research at a sixth form college within their GCSE resit programme.

This presentation focuses on the collaborative approach taken to understand the participants' view of real-life context in the classroom and to address the challenges that the participants voiced. My study used a mixture of ethnographic and design research methodologies and uses work by Lincoln and Guba to create trustworthy qualitative research all within an action research framework. Through collaboration, at a departmental level involving the teacher participants, a sequence of lessons was designed, created grounded in real-life context and implemented in both research environments. Data was collected from these lessons through a process of pre- and post-assessments, teacher participant interviews and lesson observations. The aim was to build confidence and understanding for my teacher participants and to improve outcomes for the students. The results showed improvement to student engagement with some improvement to outcomes, echoing the findings of Dickinson. However, there was significant changes to the teacher participants views of teaching real-life context in mathematics.

3.4b	Ash, Andy Understanding 'Representational Activities': How teachers move between multiple representations to facilitate mathematical thinking	
RPS	5-15, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, System Leader, Consultant, PD Lead, Curriculum Developer
Research highlights the importance of teachers using multiple representations such as diagrams, manipulatives, graphs, and symbols to develop pupils' mathematical understanding. While familiar frameworks like the 'Concrete–Pictorial–Abstract' approach offer helpful guidance, they do not fully reflect the in-the-moment decisions teachers make about how to select, connect, and sequence representations in the classroom. As a practicing teacher myself, I became interested in how to better understand representational activities in the primary maths classroom. This interactive seminar draws on my analysis of primary mathematics lessons in England, including lesson observations, video recordings, and video-stimulated recall interviews with teachers. The work began as a doctoral study and has been extended through engagement with the English Maths Hub network, with ethical approval granted by a university ethics committee. Using Legitimation Code Theory as a lens, participants will explore how teachers move between representations, showing how teacher pedagogy shifts the lesson between simpler, context-dependent meanings and more generalised and complex mathematical ideas. Through guided analysis of classroom examples, participants will identify and discuss these shifts in practice. A central feature of the session is the use of “semantic pathways”, which make visible the sequence of representations within a lesson. Participants will engage with visualisations of these pathways and consider how they can be used to plan, adapt, and reflect on teaching. By making these pathways explicit, teachers can be supported to deliberately design and reflect on their use of representations, therefore providing a shared language for representational activities.		

3.5	Coe, Nicola Teaching Maths and Science - a collaborative approach	
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IWAD	11-16+, FE	Practitioner, Teacher, Teacher Educator, SLT, Curriculum Developer
Have you ever thought does it matter whether a line of best fit is straight or curved? ... should we always include all data points when calculating the mean? Maths teaching does not only take place in maths classrooms, science teachers also teach many maths concepts. It is important that maths and science teachers have an awareness of the similarities and differences in the maths that is taught within and across subjects to enable the most effective support for students. Working together, understanding requirements, sharing concepts and ideas can enable teachers to adopt a cohesive approach in which everyone benefits. We want to teach students effectively, to allow them to become full and rounded STEM learners with the ability to apply their skills and develop a comprehensive understanding. In this workshop secondary teachers will be encouraged to think beyond the maths classroom; to identify common maths and science content; to discover how mathematical topics can look different in science; and explore ways of teaching that develop significant mathematical understanding while providing fluency in the skills required for success in science. Be prepared to challenge you current thinking and consider how collaboration might be beneficial.		

3.6a	Apostolidu, Masha; *Johnson-Wilder, Sue Developing Teaching Competencies for Mathematical Resilience in GCSE Resit Learners in Further Education	
RPS	Post 16/FE, alternative provision, adult, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, PD Lead, Mentor/Coach, Curriculum Developer
Further Education (FE) providers in the UK work with many GCSE resit learners who bring adverse prior experiences of mathematics, often characterised by repeated failure, low confidence, maths anxiety, and disengagement (Dalby & Noyes, 2020; Dowker et al., 2016). For these learners, compulsory continuation of mathematics post-16 can reinforce negative mathematical identities unless teaching addresses both cognitive and emotional barriers to learning. The Mathematical Resilience framework (Johnston-Wilder et al., 2021) provides a research-informed approach to supporting learners to re-engage with mathematics through supportive challenge, productive struggle, and positive learner identities. Emerging evidence from FE contexts suggests that when teachers create psychologically safe classrooms, normalise mistakes, and help learners work within a growth zone, students demonstrate greater confidence, persistence, and engagement (Apostolidu & Johnston-Wilder, 2023; Para & Johnston-Wilder, 2023; Rashid & Johnston-Wilder, 2025). This paper presents an emerging framework of teaching competencies for developing mathematical resilience in GCSE resit learners. These competencies foreground inclusive, compassionate teaching and growth mindset approaches, recognising that many students require relational trust before they are willing to take academic risks. Key competencies include:		

recognising and responding to maths anxiety; using language that communicates high expectations and belief in improvement; designing low-threat, high-challenge tasks; scaffolding success to rebuild self-efficacy; promoting collaborative dialogue; and creating classroom cultures where effort, mistakes, and persistence are valued.

Grounded in ongoing practitioner-research in FE settings, this work contributes to the growing evidence base on post-16 mathematics learning and invites discussion on how these competencies can inform professional development and equitable practice across diverse FE contexts.

3.6b	Hill, Clare Measuring the Unmeasurable? Aligning TIMSS 2023 Survey Items with the NCETM Mastery Framework	
RPS	11-16, CPD	Practitioner, Teacher, Teacher Educator, Researcher, PD Lead, Curriculum Developer
Large-scale international assessments offer policy makers comparative insights into educational practices but their survey instruments were not designed to capture the epistemological specificity of mastery pedagogy. This paper presents a TIMSS–NCETM alignment matrix developed as part of a mixed-methods study examining KS3 mathematics teachers' conceptualisation of mastery and their selection and use of classroom resources in England, with comparative reference to China and Singapore. The matrix maps TIMSS 2023 teacher and student questionnaire items against the Essence of Mathematics for Teaching for Mastery, identifying degrees of alignment, partial proxies, and structural gaps. One finding is that the Essence components most distinctive to mastery — particularly representation selection, precise mathematical language, and deep conceptual understanding — are precisely those least accessible to survey instrumentation. The matrix is presented as a work-in-progress and I will invite critical examination of its construct validity.		

3.7a	Bamber, Sally; Price; Rhiannon Students' Experiences of Collaborative Design Research in Lower Secondary	
RPS	9-16, ITS, CPD	Practitioner, Teacher, Teacher Educator, PD Lead, Curriculum Developer
This seminar is based on collaborative design research projects intended to raise attainment in a secondary school in a community that faces challenges. It represents a novel school and university collaboration. The design-based research projects focus on learning algebra in lower secondary school, tackling features that arise from transition from primary school, whilst building cohesive approaches to algebra teaching. The design is concerned with students' sense of belonging in mathematics in lower secondary school as well as research that informs early algebraic generalisation. This seminar will focus on the students' perceptions of the projects.		

3.7b	Thomas, David; Fitzpatrick, Agnes Mathematics and Belonging in Key Stage 3	
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RPS	9-16	Practitioner, Teacher, Teacher Educator, SLT, System Leader, PD Lead, Curriculum Developer
We know that pupils switch off from mathematics at a high rate during Key Stage 3. We also know that there is a collapse in engagement and belonging with school in general at this time. Both trends disproportionately affect children experiencing disadvantage. But how do they interact? In this seminar we will present new findings from a research study conducted jointly by Axiom Maths and ImpactEd, surveying pupils to understand how mathematics can increase school belonging.		

3.10	Chair: Noyes, Andy Lee, Stephen, Brignell, Chris; Powell, Jake; Gripton, Cath; Sirl; Dave Trends and developments in mathematics education in England: insights from RoME 26	
RS	3-16+, FE	Practitioner, Teacher, Teacher Educator, Researcher, SLT, System Leader, Consultant
What have been the key changes in the mathematical education landscape in England over the past year, and how do these fit into, and explain, longer term trends? This session explores those questions through a presentation of highlights from the Observatory for Mathematical Education's review of the year 2025-26 and ongoing trend analysis work. The session will present for discussion selected high-level national statistics on mathematics education and the Observatory's thematised synthesis of pertinent policies, practices and their implementation, across all age phases of compulsory and post-compulsory education during 2025-26. Whilst this includes the highly publicised Curriculum and Assessment Review, together with the schools and the post-16 education and skills white papers, it also outlines lesser-known interventions like maths champions for nurseries and Nuffield's project on long-term outcomes of high-achieving disadvantaged children. There will also be an update on edtech and AI. The session will enable participants to step back and make sense of what's been happening in mathematics education over the past year, but also to see the bigger, longer-term picture through presentation of trend analysis over the last 20 years. Some of this was presented in earlier reports (Mathematics Pipeline in England, 2023; RoME, 2025) and here we extend that analysis to show how current policy moves and debates relate to the longer term trends in participation and outcomes in mathematics education.		

Session Four 15:45 - 16:35 Friday 23rd October

4.1 Archer, Rosa; Hyde, Ros; Bamber, Sally **Fostering student teacher agency: ITE or ITT?**

RT	ITE	Teacher Educator, Researcher, Mentor/Coach
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This roundtable returns to a central tension in the field of Initial Teacher Education: whether early preparation is best conceptualised as Initial Teacher Education or Initial Teacher Training. Framing this debate, we foreground the concept of student teacher agency and its place within contemporary mathematics programmes. The conversation will address whether fostering agency should be an explicit goal of initial preparation, what is at stake if it is diminished and the risks associated with fostering beginning teacher agency. This will be situated within the current policy climate, including the influence of the ITTECF Framework

(https://assets.publishing.service.gov.uk/media/661d24ac08c3be25cfbd3e61/Initial_Teacher_Training_and_Early_Career_Framework.pdf), with reflection on its implications for the intellectual foundations of mathematics teacher education.

In particular, we will consider what may have changed through the expansion of school-led training models. We will consider why prospective student teachers choose university rather than school-centred teacher education routes. Are such decisions driven by a desire for greater professional agency or other pragmatic factors? Building on this, the discussion will examine whether - and how - student teachers develop agency during the PGCE year. What experiences, structures, and relationships enable them to act as informed professionals able to make their own decisions? The roundtable will also explore how student teachers exercise agency in lesson planning, especially in contexts where pre-designed or commercial resources are widely used. It will also consider the extent to which student teachers are influenced by pedagogical approaches encountered in their teacher education, identifying spaces that enable or constrain the development of agency.

4.2 Pope, Sue; Pritchard, Chris; Rowlett, Peter; Edmiston, Alan **Writing for professional journals**

IWAD	0-16+, FE, adult, alternative provision, UG, PG, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
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Professional journals are a place to share ideas about mathematics education, reflect on practice, consider learners' response, challenge orthodoxies, provoke discussion, offer 'just suppose', review a book or resource, and much more.

The editors of some of AMiE's journals (*Equals*, *the Mathematical Gazette*, *Mathematics in Schools* and *Mathematics Teaching*) will facilitate this workshop. We will explore ways in which you might contribute to AMiE's professional journals and discuss the support available.

4.3	Thomas, Greg; Berry, Anna Embedding problem solving strategies	
IWAD	11-16+	Teacher, Teacher Educator
In this session Greg & Anna will explore the exam board agnostic 'Focus on success: Problem solving' pack. This resource supports teachers in delivering problem-solving strategies key to GCSE success. We'll also consider strategies to embed problem-solving techniques in day-to-day teaching.		

4.4a	Trundle, Ruth; Palmer, Helena Sustained shared thinking for all	
RPS	3-14, CPD	Practitioner, Teacher, Researcher, SLT, Consultant, PD Lead, Curriculum Developer
Observations in classrooms and conversations with teachers indicate reduced space in lessons for learners to think mathematically. Contributing factors include mathematical thinking being stripped from lessons to 'reduce cognitive demand', teachers controlling the thinking in lessons to keep everyone together, and a focus on coverage of materials. To counter this, we ran a small two-year action-research project exploring whether sustained shared thinking could have a place in every classroom. Sustained shared thinking emerged from REPEY and EPPE research, where it was suggested that 'learning is usually the result of a process of cognitive construction that is only achieved when the child is motivated and involved'. They noted that 'more sustained shared thinking was observed in settings where children made the most progress.' Sustained shared thinking involves genuine interest in collaboratively exploring the thinking a learner brings to a situation. While the REPEY and EPPE research focused on early years, this genuine interest in learners' thinking is something we recognised from our own teaching with older students, and we explored opportunities with teachers from across the primary age range. We found sustained shared thinking is not well understood, there are few mathematics examples in research literature and education materials, including the EPPE reports, but the potential is there. In this workshop we will share our understanding of barriers to mathematical thinking and the potential of sustained shared thinking, exploring examples to identify key conditions.		

4.4b	Thein, Khin Aye Chan; Li, Hui Researching Early Numeracy in Myanmar: Methodological Reflections on Research Instruments Adaptation	
RPS	3-9	Teacher, Teacher Educator, Researcher, Learning Support, Consultant
There is a critical need for culturally and linguistically validated assessment tools in early childhood education in Myanmar. Importing Western tools without rigorous cross-cultural validation risks introducing cultural and linguistic biases, as concepts, pictorial representations,		

and task instructions may not directly translate to the lived experiences of Myanmar children. This pilot study serves as a preliminary phase for a larger three-wave longitudinal investigation into early numeracy trajectories. It assessed the feasibility, cross-cultural equivalence, and psychometric properties of several early numeracy and relational instruments—including the Early Numeracy Test-Revised (ENT-R), the Head-Toes-Knees-Shoulders-Revised (HTKS-R), the Mathematics Motivation Questionnaire for Children (MMQC), the Student-Teacher Relationship Scale (STRS), and the Home Numeracy Questionnaire—adapted for kindergarten and Grade 1 children in Myanmar.

Conducted across four schools with 33 children, 31 parents, and 3 teachers (reporting on 104 students), the study identified key logistical and psychometric challenges. Results demonstrated the overall feasibility and reliability of the adapted instruments, though modifications were required, such as simplifying Likert scales for young children, splitting assessment sessions to mitigate fatigue, and providing oral support for parents with literacy barriers. Item analysis of the ENT-R revealed the tool's discriminative power and a broad distribution of item difficulty, effectively capturing the variance in early numeracy competencies. Furthermore, Exploratory Factor Analysis (EFA) on the STRS confirmed its cross-cultural validity. These findings provide a robust methodological framework for future longitudinal research and underscore the necessity of rigorous cross-cultural validation when importing Western-developed educational tools into Southeast Asian contexts.

THIS SESSION IS BEING PRESENTED VIRTUALLY.

4.5a	Rempe-Gillen, Emma; Ashmore, Lisa “Generative AI is evil”: (Re)Learning to teach maths in the age of GenAI	
RPS	5-16, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
Generative artificial intelligence (GenAI) has become increasingly visible in educational settings, so it is important to understand the landscape of what is happening in schools in order to meet teacher needs and to prepare trainees for this changing world of education. Our presentation focuses on the partnership of research and practice as we draw on teachers’ and trainees’ perspectives and experiences of using GenAI for teaching mathematics. We report our findings from the first year of an on-going study where data were collected from trainee teachers and in-service teachers across primary and secondary education settings in England. Through surveys, interviews and focus groups our findings demonstrate the broad and varied range of understanding and practices that teachers are experiencing in mathematics classrooms in 2026. Trainees and teachers report a spectrum of mathematics experiences, with some schools not engaging in GenAI at all and others embracing GenAI. Alongside this, our analysis indicates that trainees and teachers are unsure how to harness the power of GenAI effectively for teaching mathematics, often related to lack of confidence as well as knowledge. Furthermore, whilst our research explores how GenAI can facilitate mathematics teaching and learning, we also highlight the strong views and varied appetites that the topic of GenAI in the mathematics classroom evokes. We present ways forward for both teachers and those working in the fields of teacher development and initial teacher education.		

4.5b	Donaldson, Becky; Watkins, Joe When AI meets the department: the tailoring debate and the change dynamics from an NCETM work group	
RPS	11-16+, FE, adult	Practitioner, Teacher, Teacher Educator, Researcher, SLT, PD Lead, Curriculum Developer
Over four half-day sessions we led an NCETM Research and Innovation Work Group of secondary mathematics teachers using AI to design mastery-aligned materials. This seminar is not a tour of that material. It is a review of what happened in the room when teachers wrestled with the pros and cons of AI, how to tailor resources for specific learners, and what it takes to change practice in a department. Drawing on the NCETM's Teaching for Mastery framework and emerging work on generative AI in teacher practice, we set participants structured tasks and captured the resulting discussions. Teachers trialled outputs with their students between sessions, so the findings reported here are grounded in classroom trial as well as professional debate. Two strands emerged most sharply. On tailoring materials, teachers were split. Some saw AI as finally unlocking meaningful adaptation for neurodiverse and EAL learners; others felt it risked promoting excessive (and ineffective) differentiation. We considered the conditions needed for AI-enabled tailoring to genuinely help learning. On departmental change, teachers were candid, reporting both challenges (such as mistrust in technology and resistance to new workflows), and successes (such as inexperienced/experienced teacher pairings that developed teachers' subject knowledge alongside their confidence with AI). Delegates will see the tensions raised and the patterns that did and did not drive change, with an emphasis on how teachers might use generative AI tools not simply to save time, but to actually improve practice. The session embodies BCME's theme by reporting findings generated through genuine research-practice partnership.		

4.6a	Proulx, Jerome On various tensions related to the notion of absolute value in schooling	
RPS	14-16+, FE, UG	Practitioner, Teacher, Teacher Educator, Researcher
The teaching and understanding of absolute value is often considered simple, although research has outlined since the 1990s significant challenges encountered by students and their teachers. These challenges, and the ensuing difficulties, have often eluded educators who appear to be at loss to envisage viable solution to help teachers and students to overcome them. In this research-practice seminar, I want to address a number of tensions that appear to exist in schooling practices (and its related research) about the notion of absolute value. These tensions concern students' understandings, teaching practices, and issues about the content itself and its origin in the history of mathematics: the arithmetic vs. algebraic relation; the usage of definitions; the role of 0; the focus on equations and inequalities; and the elimination of absolute value 'bars'. Far from asserting that addressing these tensions constitutes a panacea to settle all challenges related to absolute value, drawing them out aims to instigate didactical reflections, raise sensitivities		

toward the notion of absolute value; a notion that, again, appears so simple while being replete with challenges of many sorts.

4.6b	Norley, Kevin A study of the teaching and learning of effective and efficient numeracy methods in a post-16 learning environment	
RPS	11-16+, adult, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Curriculum Developer
Linking the skills shortage in the UK to a lack of numeracy skills, the study seeks to show how the teaching and learning of effective and efficient numeracy methods in schools and colleges, can support and motivate all those who struggle with numeracy, regardless of their background. The cohort consists of around 200 participants, including adults studying Functional Skills or GCSE maths, and 16 – 18 year-olds studying on a GCSE maths resit programme, in a post-16 learning environment within colleges of Further Education across England. By focusing on areas of difficulty in numeracy that many learners face, the objective of the research is to show how a range of numeracy methods (to be demonstrated during the session) can be used to help develop learners' numeracy skills. Through testing participants using a methods-based numeracy questionnaire, this qualitative study focuses on a set of numeracy methods which participants are not familiar with, along with a set of methods which students are familiar with, yet struggle with. In the study's literature review, a Department for Education research paper, outlining how knowing methods helps students to learn knowledge (and vice-versa) is highlighted, and linked to the study, along with research that concludes that there has been a lack of emphasis on the teaching and learning of suitable numeracy methods in the education system. Findings show that the majority of participants were not able to draw upon any suitable or effective methods to solve the majority of questions in the latter part of the questionnaire.		

4.7	Cooper, Joe; Baldwin, Claire* Enabling Equitable Access to Advanced Mathematics	
IWEMA	11-16	Teacher, Teacher Educator, SLT, System Leader
Despite high prior attainment, disadvantaged students are significantly less likely to achieve their expected GCSE mathematics outcomes: those with the same Key Stage 2 attainment are around twice as likely to miss their GCSE target grades compared with their peers who are not known to face disadvantage. By age 15, students in the lowest economic, social and cultural status (ESCS) decile can be as much as three years behind their peers in the highest decile, according to data from PISA (2015, 2022). These patterns raise critical questions about progression, opportunity, and access to advanced mathematical learning. In response to this challenge, the Department for Education-funded Higher Level Maths Achievement Programme (HLMAP) was launched in 2025–26, through a partnership of the National Centre for Excellence in the Teaching of Mathematics (NCETM), Maths Hubs and the Advanced Mathematics Support Programme (AMSP). The programme is designed to support teachers to enable more students facing disadvantage access and progress in Level 3 mathematics.		

This interactive workshop draws on selected mathematical and professional learning activities from HLMAP, alongside the research evidence that informed the programme's design. Participants will explore how these activities seek to strengthen mathematical confidence, support progression, and widen participation in post 16 mathematics. The workshop will share emerging insights into teacher practice and student engagement, and to reflect on the refinements made in its second year in response to these.

4.8	Hough, Sue; Bartoli, Marisa Testing, testing, testing, when less is more. A different view of progress	
IWAD	11-16+, FE	Practitioner, Teacher, SLT, Curriculum Developer
In this session we spend time analysing students' written responses to some carefully constructed assessment items, looking at the degree to which students have used informal / formal methods. We ask how a teacher might draw on the information gained from the analysis to develop their students' approaches by building from where the student is, rather than imposing a formal algorithm. We look back to the materials and classroom cultures which have produced this range of approaches. Finally, we consider how the test items can be woven into a department's assessment strategy to support less emphasis on formal testing. We draw on the experiences of one of the presenters who is the Director of Maths at a successful Multi-Academy Trust comprising six secondary schools. Her schools prioritise mixed attainment teaching and use a curriculum which focuses on the emergence (rather than imposition) of some key models that students can access at a level appropriate to them, whilst building connections across topic areas. Importantly here, progress towards formal mathematics is seen as a long-term aim.		

4.9	Amoo-Gottfried, Jason Factors First: Experiencing the Multiplicative Architecture of Number	
IWEMA	7-16+, FE, adult, alternative provision	Practitioner, Teacher, Teacher Educator, Researcher, Learning Support, Consultant, PD Lead, Curriculum Developer
Much of school mathematics is taught through an additive lens — numbers as things to count, add, and subtract. Yet many curriculum topics, including factors, multiples, fractions, and area, are fundamentally multiplicative in structure. This session asks: what changes when prime factorisation is placed at the centre of how we understand and teach number? Prime Colours is a visual manipulative system in which coloured discs represent prime factors. Composite numbers are built physically from their constituent primes, making multiplicative structure visible and tangible. The approach is grounded in research on multiplicative reasoning (Nunes & Bryant) and structural understanding (Skemp; Bruner's CPA framework), and has been developed through sustained practice with learners aged 7–16 across primary enrichment, secondary mathematics, and post-16 GCSE resit settings in multiple countries. This session embodies the conference theme directly: practitioners and researchers will work alongside one another as learners, exploring familiar curriculum topics — factors, multiples,		

HCF, LCM, and area — through the Prime Colours system. Reflection on the pedagogical implications will be built into the session, creating space for the research and practice communities to think together.

Findings from practice suggest that visual-structural approaches support mathematical sense-making and engagement, particularly for learners who have not succeeded through procedural routes. The session will invite participants to consider what research questions this raises and how the approach might translate to their own contexts.

4.10	Chair: Noyes, Andy Gripton, Cath; Chun-Yeung, Gabriel; Woollacott, Bethany; Kaur, Balbir; Szatkowski, Lisa Mathematics education in Year 1 in England: insights from RoME 26	
RS	3-7	Practitioner, Teacher, Researcher, SLT, System Leader, Consultant, Curriculum Developer
The first years of primary schooling shape early attitudes and lay the foundations for later success in mathematics. In this session, we present for discussion a selection of findings from the Observatory for Mathematical Education's longitudinal study of primary education in England, focusing on Reception (2024/5, 4-5 years) and Year 1 (2025/6, 5-6 years). We highlight variation in teaching approaches - both between years and schools - with national guidance for mathematics teaching in Reception differing from that in Year 1, and with schools using different curriculum resources in Reception and Year 1. Our primary dataset consists of a nationally representative sample of 174 primary schools (c. 5,500 pupils and 1,600 teachers) with survey responses from pupils, teachers and Maths Leads together with longitudinal case studies of 15 schools drawn from the wider sample. We will share findings relating to school curriculum and organisational choices; teaching practices and resources; and pupil experiences and attitudes towards mathematics, including how these vary by age, attainment, sex and socio-economic status, and how these change across the transition from Reception to Year 1. Discussions will focus on selected data from RoME 26. We will consider different interpretations of the findings and how these might be useful for different stakeholders in the mathematics education system. Attendees will be invited to identify priorities for further analysis and consider priorities for data generation in future years of the Observatory's primary cohort study.		

4.11a	Joubert, Marie; Norris, Jennifer Using case study data to better understand the teaching and learning of A level maths in three sixth form colleges	
RPS	14-16+, FE	Teacher, Teacher Educator, Researcher, SLT
The Observatory for Mathematical Education has been looking at A level mathematics from a number of different perspectives: what the teachers say, what the students say and what we observe. We surveyed the teachers and students in 115 state-funded schools and sixth form colleges in 2025 and 2026, asking them, amongst other things, about how maths is taught in their institution. We also visited six sixth-form colleges and three sixth forms in 11 to 18 schools,		

observing lessons, interviewing teachers and, in some cases, interviewing students. We were interested in developing our understanding of the experience of students and teachers in terms of, for example, pedagogic approaches, resources used, the use of AI and technology more generally and the make-up and ethos of the maths department.

This seminar, which complements the Observatory's symposium presentation 'A level mathematics education in England: insights from RoME 26', draws on in-depth case study and survey data from three sixth form colleges, building a detailed picture of what A level mathematics looks like for students and teachers in these institutions. Looking across the three colleges, we identify and explore similarities and differences in departmental practices and the day-to-day reality of the classroom. We dig into the survey data to consider the perceptions of the teachers and students in these institutions and how these fit with our own observations and what the teachers and students tell us in interviews.

4.11b	Marshall, Allyse; Eves, Alison Win-win-win: lessons from student-led mathematics enrichment	
RPS	9-16+, FE, UG	Practitioner, Teacher, Teacher Educator, Researcher, SLT, PD Lead, Mentor/Coach
This session will explore the delivery and development of student-led mathematics Masterclasses within the Royal Institution programme, designed to increase the student leaders' ownership, confidence, and depth of mathematical understanding. The project is motivated by a desire to move beyond traditional models of outreach, positioning students as active partners and leaders in the design and facilitation of inspirational hands-on mathematical experiences for their younger peers. Taking place across the UK, we work with older secondary school students (aged 15+) and undergraduates to support them to develop and deliver RI Masterclass workshops for primary and lower-secondary children. We draw on good practice and research from across education and science communication, including dialogic teaching, student voice, and constructivist approaches to learning, to enable us to train and support the students who can, in turn, produce interactive, exploration-led workshops for their younger peers. This session will focus on some key findings, including the opportunities and challenges of supporting student agency while maintaining the quality of the output in developing mathematically deep, engaging and interactive workshops at the appropriate level for the younger learners. We will share insights from the programme, exploring the win-win-win: examining how providing students opportunities to lead and self-design activities influences mathematical engagement and confidence; seeing how younger children learn in a different way from their peers; and sharing how such a project benefits the educational host. We will conclude by reflecting on practical considerations for educators seeking to incorporate student-led approaches in their own contexts.		

4.12a	Coles, Alf; Helliwell, Tracy; Malkin, Elliot; Bryant, Isabelle Maths and Oracy: developing teacher skills in running dialogues at KS3 through video clubs	
RPS	11-16, ITE	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, PD Lead

In this session, we will present some of the findings from a research project involving 12 secondary schools, which aimed to develop teacher skills and confidence in oracy and, specifically, the use of “mathematical dialogues” in KS3 classrooms. We defined a mathematical dialogue as a 5 to 15-minute section of a lesson in which there is a whole class discussion about a mathematical idea, which also involves some opportunity for writing. How we think about dialogue and writing is influenced by researchers including: Imre Lakatos, Gregory Bateson, Neil Mercer and Laurinda Brown. Following a launch day in July 2025, the project ran from Sept-Dec and involved fortnightly video clubs, in which the participating teachers brought 3 to 4-minute clips of video recordings from a dialogue they had run. The way of working in these clubs drew on Alf Coles’ past research.

We found: (a) introducing mathematical dialogues did feel like a new and, in some cases, risky practice; (b) half of teachers reported that they were running dialogues in most lessons with their focus class by the end of the project; (c) for some teachers, running a dialogue ceased being a separate event in a lesson and became more like a way of teaching; (d) teachers reported writing being a key strategy for including all students in dialogues; (e) many teachers reported improvements in student engagement; (f) there were concerns about getting through the school’s planned curriculum, with time given to dialogue. The research has led to some schools having a departmental focus on classroom dialogue. We are looking to expand the research to more schools.

4.12b	Ingram, Jenni; Kimber, Elizabeth Supporting mathematics classroom communication practices through a short online professional development programme	
RPS	9-14, ITE, CPD	Teacher, Teacher Educator, Researcher
Communication-responsive mathematics teaching includes awareness of and support for the linguistic demands of learning mathematics, creating opportunities for students to articulate their reasoning, and making connections between representations (verbal representations as well as diagrammatic and symbolic). Researchers have also identified specific ‘talk moves’ that teachers can use as they develop their communication-responsive mathematics classroom practice. As part of our work to support communication-responsive teaching, we worked with a group of KS3 teachers who participated in an online professional development programme over one term. The programme materials included research summaries of key concepts and offered models of communication-responsive mathematics teaching through guidance for using existing rich mathematics classroom tasks in communication-responsive ways and short videos showing authentic classroom use of talk moves. During this session we will share some of the publicly available programme materials and report on teachers’ responses to these and their reports on how they used and developed talk moves through the programme. We also consider the implications for the development and adoption of similar professional development materials in the current school and policy climate.		

Session Five 9:00 - 9:50 Saturday 24th October

5.1	Granger, Helen; Lewis, Matt; Ford, Jennie; Turvill, Rebecca; *Coles, Alf Can research and dedicated programmes effect change to mathematics education at scale?	
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RT	3-16+, FE, PG, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, System Leader, Consultant, PD Lead, Curriculum Developer
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This round table discussion concerns changes to mathematics teaching and learning at scale. Professor Toby Lowe, a public management action researcher, shared an uncomfortable truth that “in complex environments, it is impossible to ‘demonstrate your impact’ “, and advocates for collaborative learning and adaptation; his blog post is the starting point for this discussion. Inspired by the Research and Practice in Partnership theme of BCME10, this discussion is hosted by colleagues with experience of research and of involvement in local, regional and national programmes:

Professor Alf Coles (University of Bristol & 2023-25 Chair of BSRLM)

Jennie Forde (Maths Hub Lead for Bucks, Berks & Oxon Maths Hub, & currently on the University of Oxford Masters in Teacher Education)

Helen Granger (mathematics PGCE Lead at the University of York, & NCETM)

Matt Lewis (NCETM, & current PhD candidate at Loughborough University)

Dr Rebecca Turvill, Director of Primary Maths at Bosco Catholic Education Trust

This discussion is open to colleagues working at all phases. We will address the following questions:

- what has changed in mathematics education over the last 5 years?
- to what extent are these changes linked to research and dedicated programmes of PD?
- how does change take place (a) at a personal level (b) at a school, or MAT level (c) at a national level?
- what are the similarities and differences of change processes across these levels?
- what is the role of research and PD at those different levels?
- what does all of this mean for future research, for planning PD, and for initiating change?

5.2	Ingram, Jenni; Kimber, Elizabeth; Baldry, Fay; Skelton, Jo; Macmillan, Emily Preparing a paper for the proceedings	
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IWAD	0-16+, FE, adult, alternative provision, UG, PG, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
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In this session we will introduce the process for preparing a paper for the proceedings of the BCME conference. There will be opportunities to discuss the benefits and challenges of writing a paper for the BCME proceedings, as well as finding out about the process for submitting a paper and the support available. The session will include an exploration of what makes a strong paper and what reviewers are looking for, as well as the process for submitting a paper and the support available. We will look at a range of papers from previous conferences to highlight the

key features and the possibilities for what makes a strong and interesting paper. There will also be time to work on an aspect of your own paper with the support of the editorial team, be that an abstract, the structure, or different ways of presenting your findings within the required format. This session is designed for those new to the process of writing conference proceedings, as well as those wishing to develop this form of writing.

5.3a	Cull, Grainne Same Subject, Different Stories: Mathematics Teaching and Learning Across Three Teaching Roles in Irish Primary Schools	
RPS	5-14	Practitioner, Teacher, Teacher Educator
The enactment of redeveloped curricula is currently underway in Irish primary schools, including the 2023 Primary Mathematics Curriculum (PMC). The PMC identifies the development of mathematical proficiency as its overarching aim, encompassing conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition. This paper examines how teachers across three teaching roles described mathematics teaching and learning immediately before this curriculum. It offers a pre-enactment baseline with relevance for its ongoing enactment. Drawing on open-ended survey responses from mainstream class teachers, special class teachers, and special education teachers in Irish primary schools which were collected in 2021, this paper offers a three-role comparison within a single dataset. Data were analysed qualitatively using thematic analysis. Ethical approval was granted by the institutional ethics committee. Survey participation was voluntary, all responses were anonymous, and informed consent was embedded in the survey process. Findings revealed notably different patterns across the three roles. Mainstream teachers described a tension between organisational concerns and participation in mathematical learning. Special education teachers focused predominantly on delivery models and support for procedural fluency. Special class teachers emphasised functional mathematics and real-life relevance. Across all three groups, there was little reference to mathematical practices now foregrounded in the PMC. This pre-enactment snapshot illuminates the professional starting points from which the PMC's vision is now being enacted, and considers what these different starting points mean for teachers across all teaching contexts in Irish primary schools.		

5.3b	Oakes, Dominic How are teachers using a national PL offering?	
RPS	3-16	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, PD Lead
The Mathematics and Numeracy Professional Learning Offer (M&N PLO) has recently been released in Wales. It aims to support practitioners in developing a deeper understanding of learner progression across the 3-16 mathematics and numeracy journey and to support them in their planning. Developed through a Welsh Government contract, the offer includes progression		

step-based Hwb (a Welsh Government web platform, accessible across the UK) playlists that provide detailed pedagogical guidance aligned with the vision of the Curriculum for Wales.

The resources focus on progression through the Five Proficiencies and the increasing sophistication of key mathematical concepts from ages 3-16. With over 30,000 views to date and around 350 visits per day, the playlists seem to be proving a valuable resource for schools and practitioners.

This session will introduce the resources including the Welsh context and briefly explore how they can be used to support curriculum planning, including the design of lesson sequences and units of work. This will include an overview of the structure and purpose of the resources.

I am interested in exploring the use of the M&N PLO across schools in Wales towards gaining an understanding of, a) how useful they have been, b) what improvements may be beneficial, and, c) whether any wider lessons can be learned in the area of large-scale in-service professional learning. I am at the planning stage for carrying out this exploration. Experience of BCME & BSRLM tells me that delegates will most likely have lots of ideas for investigating my questions!

5.4a	Mackle, Kieran Great Expectations: Ten Stories of Mathematics Leadership, Challenge and Change	
RPS	3-16+, FE, alternative provision, CPD	Teacher, Researcher, SLT, Learning Support, System Leader, Consultant, PD Lead
What difference does a Maths Hub make over time? This session presents qualitative research into the Kent and Medway Maths Hub, exploring how teachers, leaders and schools understand its influence on professional development, classroom practice and school culture across the first ten years of the Hub's work. Drawing on interview data, the session examines both the perceived benefits of Hub engagement and the complexities that sit beneath system-level professional development. The findings offer a timely opportunity to reflect on the role of Maths Hubs in supporting mathematics education and on how meaningful professional change is experienced by those working in schools.		

5.4b	Birkhead, Amy Between ideals and realities: Navigating identity tensions in early career mathematics teaching	
RPS	11-16, ITE, CPD	Teacher, Teacher Educator, Researcher, PD Lead, Mentor/Coach
This session explores the tensions experienced by Early Career Teachers (ECTs) of secondary mathematics as they construct their teacher identities. The study aims to understand how ECTs navigate tensions between how they aspire to teach mathematics and the constraints and opportunities of their school contexts, including how they exercise agency.		
Framed by a Community of Practice perspective which views identity as negotiated through participation in professional communities, tensions are understood as emotive experiences which		

offer opportunities for professional learning and identity work. They highlight how beliefs and research-informed principles about mathematics teaching are translated, adapted, and at times constrained by ongoing professional relationships and school policies.

Adopting a narrative inquiry approach, the research draws on in-depth interviews and written reflective accounts from six ECTs teaching secondary mathematics. Findings indicate persistent tensions between curriculum coverage, accountability pressures associated with mathematics as a core subject, and ECTs' commitments to making mathematics engaging, relevant, and conceptually rich. Teachers' attempts to navigate these tensions and adapt their practice highlights the importance of mentoring relationships alongside subject-specific professional learning, which is omitted from the Early Career Framework.

The session will present key findings from the study and invite participants to reflect on how identity tensions can be made an explicit focus within initial teacher education and ECT mentoring. It will argue for the importance of supporting ECTs to recognise and reflect on these tensions to better translate beliefs and research-informed principles about mathematics teaching into practice within the constraints of school contexts.

5.5a	Button, Tom; Butler, Rob Data Science and AI education: the present and the future	
RPS	14-16+, FE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, System Leader, Consultant, PD Lead, Curriculum Developer
MEI has been running data science courses for both teachers and students since 2020. These courses focus on the mathematical underpinnings of data science, machine learning and Artificial Intelligence (AI). They have been very popular and have been accessed by hundreds of teachers and thousands of students. In this seminar we will reflect on our experiences of delivering these courses and the implications for the future of the curriculum. It will include evidence of how ongoing design and implementation experiences are informing a long-term approach to data science and AI in the curriculum. We will cover: • The design decisions that have informed the development of these courses and evidence of how the courses are being received by participants. This will include an analysis of the impact of seeking to appeal to a diverse range of students. • Reflections on the current landscape for data science and AI education and the implications for the future of the curriculum. • Considerations of the next steps and what schools/colleges can be doing now to prepare for the future.		

5.5b	Fu, Arya Curriculum-Sensitive AI-Supported Mathematical Modelling: Developing A Level-Connected Modelling Activities	
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RPS	14-16+, FE	Teacher, Researcher
This research-practice seminar reports an ongoing teacher inquiry into the use of generative AI to develop mathematical modelling activities connected to the A Level mathematics curriculum. In many secondary-school settings, modelling is introduced as an enrichment activity, but its relationship with regular curriculum teaching is often left implicit. This project explores how AI can support a teacher in designing modelling tasks that extend, rather than sit apart from, students' formal mathematical learning. The inquiry is situated in an international school in Shanghai following the A Level pathway. It focuses on how topics such as functions, calculus, and differential equations can be developed into modelling activities involving realistic contexts, assumptions, coding, interpretation and communication. Generative AI is used as a design partner to suggest contexts and refine task statements. However, the analysis also examines the limits of AI-generated materials. The seminar will share examples of AI-assisted task development, including prompt design, teacher revision, and early classroom materials. It will discuss how teacher judgement is needed to decide which AI suggestions are mathematically meaningful, pedagogically usable and curriculum-sensitive.		

5.6a	Crisan, Cosette; Geraniou, Eirini; Macey, Darren Mathematics Beyond A Level in Teacher Education: An Undergraduate Apprenticeship Perspective	
RPS	11-16, UG, ITE	Teacher, Teacher Educator, Researcher, Curriculum Developer
Undergraduate apprenticeship-based teacher education offers a rethinking of pathways into teaching. This session draws on UCL's undergraduate teacher degree apprenticeship model, focusing on the design of a programme in which undergraduate mathematics and mathematics education are integrated and delivered in close partnership with schools. Apprentices join school mathematics departments, initially observing and contributing at the periphery before gradually assuming more complex teaching responsibilities. The programme is situated at the intersection of three related strands of literature: the role of undergraduate mathematics in teacher education, the pedagogical productivity of such engagement, and theories of apprenticeship learning. Central to the design is participation in interconnected communities of practice spanning university and school settings, within which engagement with mathematics beyond A level becomes integral to how apprentices interpret and explain school mathematics. The session examines how undergraduate mathematics, when integrated within an apprenticeship model, can support prospective secondary mathematics teachers in developing deep and connected understandings of school mathematics. The analysis draws on apprentices' work and their reflective accounts, interpreted in line with institutional ethical guidelines. It focuses on how they re-engage with familiar topics and how this shapes their explanations, use of representations, and attention to pupil thinking. The analysis shows how apprentices increasingly draw on undergraduate mathematics to inform explanation, representation, and responsiveness to pupil thinking.		

The session concludes by inviting participants to consider how mathematics beyond A level can function as a pedagogical resource, supporting and empowering the teaching of school mathematics.

5.6b	Inglis, Andrina Scottish Mathematics Teachers Conceptions of Working with Students on Placement.	
RPS	ITE	Practitioner, Teacher, Teacher Educator, Researcher, Mentor/Coach
A valuable aspect of Initial Teacher Education is the school-based teaching placement. Current research into this area has been dominated by measuring the effectiveness of different models deployed by supervisory teachers and the impact of these on student-teacher engagement. For example: Izadinia (2015); Richter et al. (2013); and Crasborn et al. (2011; 2008). In the secondary school context, where this study was based, it is customary for student-teachers to be supported by numerous teachers, not just the appointed supervisor, to ensure exposure to a range of classes and courses. The purpose of this study was to adopt a broader picture of school-based teaching placements by focusing on those classroom teachers so as to explore their perspectives and experiences with student-teachers. The aim of this presentation is to explain and explore the model of student-teacher learning across a placement, generated from teachers' conceptions of their work. This highlights the involvedness experienced by teachers when they accept a student-teacher into their classroom so as to contribute to the discussion around the training of mentors. This presentation will focus upon participants conceptions of shaping their student-teachers' learning trajectories, illustrating they were not simply following a well-worn guidebook. This finding alone clearly indicates that of future policy recommendations need to take account of teachers' dynamic interactions with student-teachers. Any future contractual obligation on teachers to work with student-teachers will require to be carefully crafted to foster the benefits of the existing interactions between teachers and student-teachers and to avoid setting out a prescriptive template.		

5.7a	Jayson, Natalie Where is our playful maths? An exploration into the use of play as a vehicle for mathematics.	
RPS	0-7, PG	Practitioner, Teacher, Teacher Educator, Researcher, Consultant, Curriculum Developer
This presentation draws on the data and initial analysis undertaken as part of my PhD studies. Working into two contrasting Early Years settings in Greater Manchester, over the course of a year, I worked collaboratively with teacher participants to explore where, when and how the children in their classrooms were able to experience playful mathematics. Using video as a		

means to capture children’s learning, we were able to observe interactions and activities both when adults were and were not present. These recordings were then used as the basis for reflective discussions with the teacher participants.

Play is consistently positioned in UK policy as central to early learning and development, supporting children’s cognitive, social, emotional and physical growth (Whitebread, 2012; Siraj-Blatchford et al., 2002). However, play within Early years Settings, is not a neutral or purely child-led activity; rather, it is shaped by policy discourses of school readiness, assessment and accountability which are influencing the pressures on teachers and practitioners. Currently shifting national priorities have narrowed conceptions of Early Years play and the increasing emphasis on Early Years outcomes, data and inspection regimes have contributed to the “schoolification” (Bradbury 2019) of early education where play is increasingly utilised to meet predefined educational targets. This is evidenced through pressures on both schools and teachers to ensure that Reception children are ‘school ready’ (UK Government December 2025). My initial data shows that classroom practitioners are under a range of external pressures which potentially limit and constrain their ability to offer children the opportunities to explore, reason and problem solve in child-led, playful scenarios. This is often in conflict with teachers’ views and values.

5.7b	Rycroft-Smith, Lucy Co-designing new mathematical songs for learning and teaching mathematics aged 4-5 – what we learnt and what we created	
RPS	0-5	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, PD Lead, Mentors/Coaches, Curriculum Developer
There is a research gap concerning the use of songs and nursery rhymes in mathematics learning for young children. Firstly, many practitioners use songs and rhymes , but the mechanisms by which they ‘work’, including how and when, are unclear. In addition, most early years songs or nursery rhymes that contain mathematical ideas are focused on a small number of key ideas, often counting or skip counting (and often backwards!). In this short talk, I report on a funded co-design project which explores how music and video can be co-designed with educators, researchers, animators and composers to potentially support more meaningful engagement with a more diverse range of mathematical concepts. This presentation reports on a completed co-design project involving a US-UK collaboration, drawing on existing research in mathematics education to produce evidence-based songs and accompanying materials. Together, we developed a set of classroom-ready songs, videos, and teaching materials, each focused on a specific concept: zero, time measurement, properties of rectangles, and pattern. The design process foregrounded teacher expertise, classroom realities, and the need for resources that are both conceptually rigorous and practically usable. Rather than evaluating impact, the session focuses on the process of co-design: how research was translated into musical and embodied representations, how teacher input shaped iterative development, and the challenges of creating resources that balance mathematical integrity with accessibility and creativity. THIS SESSION IS BEING PRESENTED VIRTUALLY.		

5.8	Wake, Geoff; Trundle, Ruth; Leakey, Sarah Learning from and through Japanese Problem Solving	
IWEMA	5-14, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, Consultant, Curriculum Developer
This workshop provides a unique opportunity to explore the detail of teaching and learning about Japanese Problem Solving. It draws on the teaching of one lesson to three different classes (two in Japan and one in England). In part 1 of the workshop you will explore with other participants the task that is central to the lesson and consider possible pupils' responses. The session will be informed by materials from all three lessons. In this part of the workshop you will also be introduced to important ideas about lesson study and teacher research in Japan. In the second part of the workshop you will consider in detail the different lessons that resulted in the three different classrooms and engage with the considered thoughts of teachers and researchers, from the U.K. and Europe, who have been sharing their observations of the lessons and outcomes. There will be opportunities for participants to consider this form of classroom-based research from the perspective of collaborative lesson research as an alternative conceptualisation of lesson study. This will lead to discussion of how greater collaborative research of this form can stimulate individual and collective professional learning, design of curriculum implementation and curriculum development at a national level.		
5.9	Watson, Anne Mike's Stuff	
IWEMA	7-16, ITE, CPD, other	Practitioner, Teacher, Teacher Educator, SLT, Learning Support, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
Mike Ollerton is now on the dementia journey with little memory of his wonderful work with teachers. He published 61 articles in <i>Mathematics Teaching</i> and ran hundreds of workshops for teachers and learners across the country and beyond. In this workshop there will be a collection of the tasks he used for exploring, deepening and creating mathematical ideas across primary and secondary phases. He valued working in groups, and extending exploration beyond the task or problem as set. Come if working together on school level mathematics is, or might be, your 'thing'.		
5.10	Eadie, Phil; Allen, Stuart; Marsh, Natalie; Crozier, Katie; Gee, Catherine; Burke, Stefanie Learning through talk: the use of vertical non-permanent surfaces to support exploratory talk.	
IWEMA	5-16+, FE	Teacher, Teacher Educator, SLT, Learning Support, System Leader, Consultant, PD Lead

In recent years attention has been given to supporting oracy in mathematics lessons, especially in work emerging from the maths hubs, and oracy has been identified as an explicit part of the National Curriculum for 2027.

Much work to date has focussed on learning to talk, through the use of stem sentences etc. We believe that learning to talk is a stepping-stone to learning through talk, with the aim being for learners to articulate their mathematical thinking, to make it clear to themselves and others, and to make sense of the mathematical thinking of others, developing a relational understanding of the mathematics.

To achieve this, we have been exploring ideas within Building Thinking Classrooms in Mathematics, by Peter Liljedahl, in classrooms from KS1 to post-16, in mainstream and special schools, and with adults as part of professional development. One of the 'macro-moves' has emerged as being particularly significant in supporting all learners to participate in exploratory talk, the use of vertical non-permanent surfaces.

This workshop will provide an opportunity to work on maths together using vertical non-permanent surfaces and then to consider the impact, drawing on examples from the different contexts listed above, and the decisions to make when using this approach in different contexts.

5.11	Biza, Irene; Nardi, Elena Transforming the culture of the mathematics classroom through engaging teachers with MathTASK resources	
IWEMA	5-16+, FE, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, PD Lead, Mentor/Coach, Curriculum Developer
MathTASK is a research and professional development programme in which we use research-informed, situation-specific tasks that approximate teaching events, what we call mathtasks, as a tool to support pre- and in-service teachers' reflection on mathematics lessons (theirs' and others'). When teachers engage with mathtasks, we encourage them to notice students' mathematical thinking, link it to the complexity of mathematics and its teaching and problematize long-established classroom routines, both pedagogical and mathematical. Typically, teachers engage with suites of MathTASK workshops over a school / academic year. Between workshops, they implement activities infused with insights gained in the workshops in their classrooms. We collect evidence of teachers' responses to mathtasks during workshops as well as self-reported evidence of activities they tried in their classrooms between workshops. Our analysis of the evidence we collect aim to trace shifts in the teachers' pedagogical and mathematical discourses. We pay particular attention to evidence of reification, specificity and consistency. In this interactive workshop, we will engage participants with samples of mathtasks, we will explore and debate with participants the effectiveness of MathTASK resources and we will seek from participants insights into how to scale up the implementation of MathTASK resources beyond singular sites. The samples we will share originate in MathTASK implementations in three sites: a professional development programme, a post-graduate course and an undergraduate course. The 100m of the session will be allocated to: a brief introduction (5m), 3x30m per sample (participants engagement with a mathtask, 15m; presentation of findings and discussion, 15m), concluding thoughts (5m).		

Session Six 9:55 - 10:45 Saturday 24th October

6.1a	Norris, Jennifer The ‘mathematical-ness’ of university disciplines: A-level Maths students’ perspectives and choices
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RPS	Post 16/FE, UG	Practitioner, Teacher, Researcher, Curriculum Developer
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The mathematical or statistical aspects of many university disciplines are increasing over time with the increasing use of quantitative data in numerous fields. Over a decade ago, the Higher Education Academy (HEA) mathematical transitions project found that many incoming undergraduates underestimated the mathematical demands of their degree programme. On the other hand, most A-level Maths students cite usefulness for university study as a reason for choosing the subject at A-level. This presentation will explore how current A-level Maths students perceive the mathematics demands of the six university disciplines that were the focus of the HEA project: business and management, chemistry, economics, geography, sociology and psychology. The data come from a large-scale project investigating the attitudes, learning experiences, and choices of students taking A-level Maths in England. Students at a representative sample of 119 state-funded schools and sixth form colleges were surveyed at two time points in Year 12 (age 16-17, academic year 2024/25) and Year 13 (age 17-18, academic year 2025/26). While data collection for the second survey is still being finalised, the first survey was completed by 7,176 students, with 77% of these planning to go to university. In both surveys, students were asked about their expectations of the mathematical content of the subject(s) they plan to study at university. We therefore provide up-to-date evidence of A-level Maths students’ perceptions of university disciplines while they are still in the process of choosing a degree subject, and draw out implications for encouraging uptake of A-level Maths.

6.1b	Hilliam, Rachel A data literate society without the fear factor
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RPS	14-16+, FE, adult, UG	Teacher, Teacher Educator
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Data is everywhere, but are we equipping young people with the skills to interpret it meaningfully? Data underpins everything from global economic systems, climate modelling, transport planning, and disease prediction to everyday activities such as fitness tracking, streaming recommendations, and GPS navigation. Despite this, statistical understanding among the public remains limited, and many people experience anxiety when confronted with statistics. This raises an important question: does the current school curriculum provide students with the skills they need to engage confidently with data?

In 2024, two major reports outlined recommendations for improving statistics education in schools. The Royal Statistical Society report, Key recommendations for the statistics curriculum in the UK, suggested either teaching mathematics and statistics as separate disciplines at secondary school level or placing greater emphasis on the statistical problem-solving cycle within the existing GCSE mathematics curriculum. Meanwhile, The Royal Society report, A new approach to mathematical and data education, proposed a broader mathematical and data education framework, including a general data-literacy strand built on the current Core Mathematics qualifications. Both reports stress the importance of embedding data literacy across school subjects and investing in long-term professional development for teachers.

Although these reforms represent a long-term endeavour rather than a quick fix, there are many practical steps educators can take now. This talk explores the causes of statistical anxiety and strategies for addressing it through teaching, communication, and outreach. It highlights how statistics already appears across many subjects and everyday contexts, often without students recognising it. Finally, we consider the role educators can play in shaping a future curriculum that supports confident and informed engagement with data.

6.3a	Jagdev, Manjinder Student teachers' ideas on teaching critical mathematics and social justice	
RPS	5-16+, FE, adult, alternative provision, UG, PG, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, PD Lead, Mentor/Coach, Curriculum Developer
Primary and Secondary student teachers have worked on critical mathematics education and social justice themes using a participatory action research approach to co-create practical lesson ideas to teach pupils in their placement schools. The seminar includes examples of their activities and feedback. Research questions include: How can teacher educators facilitate student teachers to embed critical mathematics education and social justice issues in schools? How do student teachers experience critical mathematics education through a participatory action research approach? What are the implications for initial teacher education and ongoing professional development? I have drawn on, for example, work of Gutstein (2006) to challenge traditional mathematics pedagogies with respect to student teacher's lessons on financial mathematics of equity, to understand and care about pay structures; climate change; homophobia; racism and minimum wages with pupils thinking critically. Examples I have used with student teachers include cross-curricular links with art and mathematics where pupils to explore moulded tile patterns from 13th and 14th Century Iran, the Alhambra in Spain and interactive tessellations; using all instruments in a geometry set to create religious symbols. Resource topics that I have created for students include Food miles, Rising sea levels, Global wildfires, Plastic waste, Child labour and Fast fashion. I share online resources such as for KS1, NASA activities, mathematics and trees and seas about global warming. Pupils' feedback and student teachers' reflections are highlighted. Links to history and geography curriculum subjects is made and learning from Indigenous communities.		

6.3b	Kasimu, Osman From Collaboration to Classroom Practice: Enhancing Teachers' Pedagogical Content Knowledge for Teaching	
RPS	11-16, ITE, CPD	Teacher, Teacher Educator, Researcher, SLT, PD Lead, Mentor/Coach, Curriculum Developer
Algebra word problems remain a persistent challenge for many learners because they require students to interpret contextual information, represent relationships symbolically, and connect arithmetic reasoning with algebraic generalisation. This seminar contributes to the BCME 10		

theme of Research and Practice in Partnership by showing how collaborative professional learning can connect mathematics education research with teachers' classroom practice.

The presentation reports findings from a qualitative study that investigated how a Community of Practice supported mathematics teachers' pedagogical content knowledge for teaching algebra word problems in Ghana. The study involved mathematics teachers who participated in professional learning sessions focused on analysing algebra word problems, discussing students' misconceptions, sharing instructional strategies, and reflecting on classroom practice. Data were generated through interviews, session discussions, teachers' written reflections, and artefacts from professional learning activities.

The seminar will show how collaboration supported teachers to reconsider the mathematical demands of algebra word problems and the pedagogical decisions needed to make these problems accessible to learners. Findings indicate that the Community of Practice created opportunities for teachers to share practical knowledge, examine alternative solution strategies, and develop more purposeful approaches to explaining variables, relationships, representations, and problem contexts. During the session, participants will consider selected examples from the professional learning activities and discuss how similar collaborative approaches might support algebra teaching in their own contexts.

The seminar offers implications for teacher educators, school leaders, and professional development providers interested in designing practice-focused communities that connect teacher learning directly to classroom challenges in mathematics.

6.4	Martin, David Cube fun	
IWEMA	11-16+, FE, adult	Teacher, Teacher Educator
In this workshop we will participate together in a range of activities to take away and use centred around the cube. This common 3D shape offers many opportunities to engage at a range of levels in various branches of mathematics including combinatorics, geometry, probability and for the mathematically adventurous, 4D. All utilising at most GCSE mathematical skills.		

6.5	Waterfield, Sam A Blended Learning Approach to Introductory Calculus through GeoGebra	
IWEMA	14-16+, FE, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
BRING ALONG A LAPTOP OR TABLET to explore GeoGebra-based resources around Year 12 differentiation and integration in A level Maths. The resources introduced in this session have been collated as part of an action research Master's project to develop students' geometrical appreciation of calculus alongside the algebraic development of skills in the classroom. Resources could also be used in the teaching of differentiation in Level 2 Further Maths courses. The resources can be utilised in part or whole throughout a full blended learning approach to the subject, or as part of classroom teaching in lessons, with functionality embedded for both GeoGebra and GeoGebra Classroom.		

The intended blended learning approach combines traditional face-to-face lessons alongside external, independently accessed technology resources. This is particularly important within the topic of calculus to give students the space and flexibility to develop a deep and tangible visualisation of key concepts, which can be built upon in algebraic methods. The impetus gained from these visual explorations gives students the intrinsic motivation to build a deep-rooted, meaningful understanding of the topic.

Findings of the action research demonstrated that the resources are effective in developing students' holistic understanding and appreciation for both geometric and algebraic aspects of introductory calculus. This work suggests potential avenues for similar blended learning approaches to other topics in mathematics – in A level or other phases.

This session will explore a small number of resources from the research project, with the full resource bank to be shared with attendees of the session following this.

6.6a	Parkes, Sam; Robinson, Paula Beyond a Checklist: Transforming Primary Mathematics Evaluation through Research-Practice Partnerships	
RPS	3-11, adult, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, System Leader, Consultant, PD Lead, Mentor/Coach
This session presents a collaborative project between Dr Sam Parkes (LLME workgroup leader) and Icklesham Primary School (Sussex Maths Hub), illustrating the Maths Hubs' role in facilitating research and innovation. This partnership evolved from an LLME workgroup into an ongoing initiative, supporting leaders to move beyond administrative tasks into scholarly practice. The session will be co-led by Dr Parkes and the Headteacher of the school, Paula Robinson. Evaluation of primary mathematics teaching is often reduced to a superficial checklist of observable practices. Dr Parkes' research addresses four problems that contribute to this: unclear evaluation purposes, the impact of curriculum on pedagogy, under-represented stakeholder voices, and the risk of de-professionalisation. Findings revealed that criteria often prioritise compliance over pedagogical reasoning, causing tensions in professional identity and limiting sustainable impact. We share a model framework designed for scalability across hubs and MATs, supporting system leaders to transition from evaluators of compliance to facilitators of professional empowerment. The exploration of the evaluation model; based on mutual engagement, joint enterprise and a shared repertoire of tools (such as subject-specific rubrics), and its application to practice has formed the foundation for the collaborative project. A reflective account of the work so far will be shared. Attendees will discuss applying these research-informed principles to strengthen links between theory, system leadership, and classroom practice and will leave with practical tools to assess and evolve evaluation processes in their own settings. <i>Provocation: How can we move beyond proxies to foster good mathematical teaching through developing communities of practice?</i>		

6.6b	Townsend, Viv; Lewis, Matt Systems to enable practitioner research to influence policy – the case of NCETM's Research & Innovation programme	
RPS	0-16+, FE, adult, alternative provision, UG, PD, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
The National Centre for Excellence in the Teaching of Mathematics (NCETM) – funded by DfE – was set up in 2006 to provide maths-specific school and professional development for schools, colleges and teachers in England. The NCETM coordinates the Maths Hubs Network, and all 40 hubs offer the same programme of established Network Collaborative Projects. In addition, each hub recruits a small number of schools to participate in Research & Innovation hub activities. These involve teachers or local leaders of mathematics education exploring new ideas in their settings in response to a locally-set research question. The findings of local Research & Innovation activity, in turn, contribute to a national research question which has been posed by one of the NCETM's Strategic Leadership Groups (SLGs). This seminar sets out the established influence pathway for local Research & Innovation activities to contribute to the evolution and improvement of Network Collaborative Projects and the Maths Hubs Programme more broadly.		

6.7a	Kingston, Denise; Barrett, Judy Teaching Effective Early Mathematics and Understanding in Primary (TEEMUP) Schools, an EEF funded CPD study – members of the Oxford University team present new quality improvement tools alongside the study's findings and impact	
RPS	3-7, alternative provision, UG, PG, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
We present the findings and lessons learnt from the TEEMUP CPD, an evidence informed intervention which puts research into practice. We introduce the key innovative tools supporting its success (the Improving Maths Pedagogy and Practice (IMPP) Scale (Kingston et al., 2026) and the Creating a Culture for Learning in the Classroom (CCLiC) Scale (Kingston et al., 2027). We believe this session will support early primary classroom educators and leaders, particularly those working with children living with disadvantage and/or additional needs. It may also inform future CPD. CPD is the most cost-effective way to maximise workforce capacities (Charalambos & Praetorius, 2018). Most likely it is a collection of behaviours which lead to effective teaching and better mathematical performance and learning in pupils (Muijs et al, 2018). This CPD is designed to uplift teachers' skills in maths content and pedagogy, and behaviour for learning, to improve children's outcomes, especially those from disadvantaged backgrounds.		

The CPD uses the extant research literature on effective professional development techniques (Egert et al., 2018), and maths and child development knowledge, most relevant to the effective understanding of how and what early mathematics is and how best to teach it (Clements and Sarama, 2021; Muijs et al, 2018).

Adopting a pragmatic worldview (Cresswell, 2014), the evaluation of the CPD includes mixed methods. Both qualitative data (the teachers' and mentors' perceptions of the CPD and how it translates into practice in the classrooms), and quantitative data (considering the children's outcomes), are captured and reported.

6.7b	Joubert, Marie; Gripton, Cath Lessons learned from the Counting Collections programme in 2025-26: a focus on pre-school settings	
RPS	0-7, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Professional Development Lead
Counting Collections is an approach to developing early number sense, involving children choosing objects to count, planning how to count them, counting them and then recording their counting pictorially (four-part routine). Following the successful 2023-24 randomised controlled trial in Reception (4-5 years) classes in England, funded by the Education Endowment Foundation, the University of Nottingham's Observatory for Mathematical Education provided the programme to 32 preschool settings with three to four-year-olds in 2025-26. Each setting received 'counting libraries' of graded boxes of manipulatives and a range of 'tools' such as pots, five frames and number tracks to aid counting, and most led short group sessions weekly. Professional development sessions supported practitioners to use the four-part routine and learning trajectories for counting, subitising, comparing and composing. Practitioners were surveyed towards the end of the programme, gathering data on how they were using Counting Collections, their professional learning and children's responses to the materials and Counting Collections sessions. We conducted interviews and observations in eight nursery classes and private day nurseries. Early indications suggest that Counting Collections is popular with three- and four-year-olds; teachers report that they are usually keen to engage with the four-part routine and they 'love the boxes'. However, the ways in which Counting Collections is adopted and adapted varies widely between settings. In this research seminar, we present our findings in the form of lessons learned for future iterations of the programme and, more broadly, for developing early number practice with 3-4-year-olds in a range of preschool settings.		

Session Seven 11:15 - 12:05 Saturday 24th October

7.1a	Leakey, Sarah The trouble with tacit knowledge and teaching: An exploration of the complexities of teaching young children mathematics	
RPS	3-11	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, PD Lead, Curriculum Developer
Can you order these vegetables from longest to shortest? This seemingly simple question proved to be deceptively complex when posed to young pupils in their first two years of school. This research-practice seminar presents a qualitative analysis of discussions between teachers as they engage in a series of six collaborative teacher meetings aimed at co-constructing, teaching and reflecting on a series of lessons related to direct and indirect comparison. The presentation will first invite attendees to explore some of the curriculum materials the participants were using and unpick potential interpretations of these materials including anticipating pupils' responses to tasks. Utilising Deborah Ball and colleagues' domains of Mathematical Knowledge for Teaching framework an analysis of these teacher discussions will subsequently be presented. This analysis will explore the dynamic interactions between these domains and how these interactions might support the development of teacher knowledge. Questions related to the depth or fragility of this knowledge are posed as we consider: How far to the surface can we bring tacit knowledge?		

7.1b	Francome, Tom Using Games to Develop Multiplication Mathematically	
RPS	5-16	Teacher, Teacher Educator, Researcher, PD Lead
One of the few areas of broad agreement in mathematics education is the importance of learning multiplication facts. But what, exactly, are they important for? For a long time, I've believed that knowing multiplication facts is valuable because it frees up working memory when tackling more complex problems that depend on them. More recently, however, I've begun to question this assumption. Some recent experiences have led me to wonder whether an over-focus on "facts" can trap learners at a surface level and inhibit the development of the richer, relational mathematical thinking we actually want to promote. This will be an active session exploring some of the issues that arise when times tables are treated primarily as facts to be memorised, I'll share a couple of ideas for developing multiplicative thinking through times tables, as well as for practising them playfully.		

7.2	Borthwick, Alison; Blinko, Janine; Burke, Stefanie; *Huyton, Pip; Williams, Helen Tasks not tests: understanding the different structures of multiplication and division	
IWEMA	5-11, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
This interactive session will offer an approach to formatively assess children's understanding of multiplication and division. There will be an opportunity to review recent research which reveals the mismatch between children's MTC outcomes and their KS2 NC outcomes and to explore simple tasks which probe children's understanding of multiplicative structures. We will have the opportunity to watch several short clips of children engaging with these tasks, consider their responses and discuss how stakeholders could use this information.		

7.3	Nye, Zoe Experience First, Formalise Later: Teaching Probability Through Experiment, Simulation and Inference	
IWEMA	11-16+, FE, ITE, CPD	Practitioner, Teacher, Teacher Educator, PD Lead, Curriculum Developer
Probability is often introduced through formal methods before students have developed an intuitive understanding of uncertainty. As a result, many learners can complete calculations without making sense of key ideas such as randomness, fairness, and expected outcomes. This workshop explores an alternative approach based on the principle of experience first in which understanding is built through structured experimentation before formal methods are introduced. Participants will engage in a sequence of classroom tasks drawn from secondary mathematics teaching. These include spinner experiments to explore fairness and variation simple games to generate and compare outcomes and structured discussion of common misconceptions such as the "law of averages". Delegates will collect data represent outcomes and make predictions across repeated trials allowing key ideas to emerge from experience. The session will then demonstrate how these experiences can be extended into more advanced statistical thinking. Using tasks such as analysing authorship through sampling (e.g. word length in song lyrics) and testing claims through simulation (e.g. identifying Parkinson's disease by smell) participants will explore how informal reasoning can develop into ideas of sampling distribution and statistical significance. Throughout the workshop will model how representations such as frequency trees and probability trees can arise naturally from experience supporting rather than driving understanding. Opportunities for small-group and whole-group discussion will support reflection on task design sequencing and classroom dialogue. Delegates will leave with classroom-ready tasks and a clear model for teaching probability and early statistical inference through experience-led learning.		

7.4	Wright, Pete; Goodland, Jane; Tierney, Nic; Jagdev, Manjinder; Parkes, Sam; Mio, Cristina; Kaur, Balbir Socially just approaches to inclusion in mathematics classrooms	
IWEMA	5-16+, FE, ITE, CPD	Practitioner, Teacher, Teacher Educator, SLT, System Leader, Consultant, PD Lead, Mentor/Coach
This interactive workshop will provide an opportunity to experience and discuss inclusive approaches to teaching mathematics viewed through a social justice lens. Participants will engage with an activity that has been designed to model inclusive practice in primary and secondary classrooms. You will reflect on how inclusive classrooms enable all learners to participate, access mathematical ideas and achieve together. You will also reflect on common myths and discourses in mathematics education that lead to the marginalisation of some learners. This workshop is aimed at primary and secondary teachers but will also be of interest to teacher educators and those providing professional development to student teachers or experienced teachers. The workshop is based on one of three professional development resources developed and trialled as part of the Promoting Socially Just Mathematics Teaching (PSJMT) research project. There will be a chance at the end of the workshop to reflect on the design of these resources. The resources, along with accompanying notes for facilitators, are freely available to download from the Teaching Maths for Social Justice Network (TMSJN) website: www.mathsocialjustice.org/prof-dev/		

7.5	Inglis, Andrina Mathematical Challenge - Celebrating 50 years	
IWEMA	9-16	Teacher, Learning Support
Mathematical Challenge is a competition for individual pupils in Scottish secondary schools and upper primary schools. Launched for the session 1976-77 by the then SMC Chairman, Professor E.M. Patterson, the aim was to promote mathematics as a source of interest and pleasurable achievement. Mathematical competitions take many different forms. Ours focuses upon solving problems as individuals working at home, with plenty of time to ponder. The problems do not involve a high degree of technical knowledge; nothing above the relevant curriculum stage is assumed. Partial as well as complete solutions are accepted and assessed according to the progress made, the ingenuity of ideas, the presentation and clarity of argument. It is important that pupils are encouraged to try the problems and that nobody should be disheartened through failure to solve some of them! The National Committee, formed of university and school teachers, produces problem sets for each session. The problem sets are sent out nationwide, but the arrangements for marking are the responsibility of the local section organiser(s) [Scotland is divided into four sections]. At the end of the session, each section holds a prize-giving ceremony. To solve a problem successfully is a source of great satisfaction, particularly if after much effort a neat, satisfying solution has been achieved. So come along to our workshop to exercise your lateral thinking and to ask questions. We will have problems with pencils and paper galore. While		

group working is not allowed in the competition, we know how beneficial it will be in our workshop!

7.6a	Thouless, Helen Tandem Conceptual Progression: A case study of the importance of answer-checking for a cognitively diverse student	
RPS	5-14, ITE	Teacher, Teacher Educator, Researcher, SLT, Learning Support, Consultant, PD Lead, Mentor/Coach
Children with difficulties learning mathematics tend to look to others to ascertain the correctness of their responses. This seminar explores the importance of encouraging children with difficulties learning mathematics to check their answers by using mathematical schemes that make sense to the child. The seminar explores one cognitively diverse child's journey through the additive reasoning schemes to illustrate the following assertions: 1) children's answer-checking schemes lag one conceptual step behind the schemes they are developing for problem-solving; 2) the use of a child's answer-checking scheme alongside the new problem-solving scheme expedites the development of the new scheme; 3) observing a child's answer-checking schemes helps the teacher assess the child's progress so they can adjust their teaching to fit the student. The discussion will explore the practical implications of these findings and the potential for further research.		

7.6b	Southall, Ed Increasing the accessibility of problem solving by identifying valuable problem characteristics	
RPS	5-16	Practitioner, Teacher, Teacher Educator, Researcher, PD Lead, Curriculum Developer
Background: One reason problem solving is valuable is because it brings together a set of skills, knowledge and dispositions. A consequence, however, is that it can feel out of reach for some learners, and difficult to incorporate into lessons or assessments. Identifying and isolating specific valuable characteristics of problem-solving questions might mitigate these concerns, while retaining the value that problem solving brings. Method: We investigated whether it is possible to isolate three characteristics: 1) the need to identify relevant mathematical structure, 2) the need to work systematically, and 3) the need to communicate or justify a solution or approach. We conducted three comparative judgement studies in which judges compared pairs of questions according to how demanding they were in terms of the characteristics. The Bradley-Terry model was applied to each set of decisions to produce scaled scores. Results and conclusions: We found that these three characteristics capture meaningful variability in problem-solving questions. Each set of judgements had adequate to good reliability. Correlations among scores for each characteristic revealed that they could be meaningfully isolated and that they are distinct from overall mathematical content difficulty. Identifying and		

focusing on specific valuable characteristics of problem solving allows for a variety of different problem-solving activities that may be accessible to more learners.

7.7a	Watkins, Joe Natural Language as the Bridge Between Pedagogy and AI: Maths as the Perfect / Anti-Perfect Test Case	
RPS	11-16+, FE, adult, ITE, CPD	Practitioner, Teacher Educator, Researcher, SLT, Learning Support, System Leader, PD Lead, Curriculum Developer
Mathematics is the perfect test case for a pedagogy-first AI content framework, and the anti-perfect one. It is perfect because mathematical content is inherently sequential, logical, and linear. It is anti-perfect because LLMs are non-deterministic by design and weak at the deterministic reasoning mathematics requires. The determinism / non-determinism trade-off is the spine of the seminar. We present the key arguments of our framework, the content production system it underwrites, and what happens when teachers use it. Drawn from an ongoing programme, Natural Language as the Bridge Between Pedagogy and AI, and sustained work across primary, secondary, further, and adult education, the framework encodes pedagogy as discrete elements with natural-language parameters (Paper 1: https://doi.org/10.35542/osf.io/bjpn6_v1). The session then focuses on learner tailoring and accessibility, the principal contribution of Paper 2. Tailoring is professionally contested and we engage that debate directly. A teacher authors a single 'primary variant' of a mathematical task that captures expertise once; variant profiles then fan it out for EAL, neurodiverse, sensory, and reading-age needs. Teacher expertise is applied once and reused, making meaningful tailoring tractable in the time teachers actually have. Outlets cited include an NCETM Research and Innovation Work Group on AI for teacher planning, partner secondary-school projects, and free social media materials being released for teachers under Grassroots Intelligence and for students under EducAIte Yourself (https://www.youtube.com/@EducAIteYourself). Delegates will see live mathematical examples and an honest appraisal of where AI's non-determinism breaks the maths and where the framework catches it.		

7.7b	Foster, Colin Teaching the BIG Ideas in School Mathematics	
RPS	11-16, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
Teachers often complain that the school mathematics curriculum is overloaded with far too much content. The race to cover it all results in hurrying learners through the details of hundreds of separate procedures. Each of these procedures must be trained and practised enough that learners remember them and can perform them on demand.		

But is there another, more conceptual, authentic and satisfying way to experience the content of the school mathematics curriculum? Instead of viewing it as hundreds of little things learners have to be able to ‘do’, could we identify a small number of BIG Ideas, and make those the main focus? Might this allow us to distribute teaching and learning energy more efficiently and with greater satisfaction?

I have recently been thinking about what this could look like, and have put my thoughts into a completely free website: bigmathematicalideas.org. Everything in the school mathematics curriculum is there, but rearranged in an unconventional order, structured around just five BIG Ideas: Thinking Multiplicatively, Thinking Algebraically, Thinking Geometrically, Understanding Functions and Graphs and Modelling.

In this seminar, I want to sketch out how school mathematics teaching could look if we spent the majority of lesson time helping learners get a really deep, connected, sense-making understanding of these five BIG Ideas. I will suggest that, equipped with that, learners could relatively painlessly make sense of all the remaining content that derives from these.

7.8	McCormick, Tom Supporting a Neurodiverse Classroom to Engage with Mathematics	
IWAD	7-16+, FE, adult, UG, ITE, CPD	Practitioner, Teacher, Teacher Educator, SLT, PD Lead, Mentor/Coach, Curriculum Developer
Increasing numbers of learners present neurodivergent traits, some formally diagnosed and many not. As awareness grows, so too does the complexity of supporting engagement in mathematics classrooms. It is within this complexity that my research has developed. Recent policy developments have placed greater emphasis on SEND and inclusion, yet much of the guidance available to teachers can feel abstract or difficult to implement within the realities of time constraints and accountability. This session shares realistic and classroom-ready strategies, informed by both classroom experience and emerging practitioner research, designed to support engagement across a plurality of learners. Drawing on my dual perspective as a late-diagnosed neurodivergent learner and a mathematics teacher (with over a decade of experience teaching Maths resit in Further Education), I will explore practical approaches that move away from a list of diagnoses being the starting point for support. The focus will be on common cognitive barriers, and the confidence and emotional barriers that often arise as a result, such as cognitive overload, mathematics anxiety, and low self-efficacy, which cut across labels and phases. Participants will have opportunities for discussion and collaboration, leading to the co-creation of a toolkit of adaptable strategies that can be implemented and shared within their own settings. The session will also mention my ongoing MPhil research, which has developed directly from this classroom practice and lived experience, supporting engagement in neurodiverse resit mathematics classrooms. This research examines the impact of this approach and a move away from the deficit-centred nature of support currently.		

7.9	Gifford, Sue; Lancaster, Andrea; Taylor, Robin Progression in blockplay from birth to seven years: A learning trajectory for educators from ECMG	
IWEMA	0-7, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Consultant, PD Lead
Blockplay provides an important way of developing spatial reasoning and mathematical thinking: research finds that the complexity of young children's constructions predicts their later maths learning generally. Learning trajectories enable educators to identify what children are learning and help them to develop further. Whereas most blockplay trajectories emphasise imaginative and symbolic play, the Early Childhood Mathematics Group (ECMG) progression focuses on mathematical learning from babies' early exploration of blocks to the multi-storeyed constructions of older children. It is based on published research and the observations and experience of expert early years practitioners. In this session we will do some building with Community Playthings unit blocks, and use the ECMG progression to analyse potential mathematical learning. Through making ramps, bridges and complex structures, we will consider aspects such as equivalence, shape properties, unitising and visualising, problem solving and critical thinking. We will discuss ways to support and challenge learners, and to use other resources, including natural materials, photos and floorplans. We will welcome feedback and suggestions.		

7.10a	Hataru, Vesife Assessing Creativity in Mathematics	
RPS	9-16, UG, PG, ITE, CPD	Teacher, Teacher Educator, Researchers, Consultant, PD Lead, Mentor/Coach
Many national curricula now position creativity as a key goal of mathematics education. However, curriculum intentions alone are insufficient unless teachers are able to recognise, value, and support mathematical creativity in classroom practice. This study focuses on teachers' own mathematical creativity as a crucial, yet under-researched, component of this agenda. The study reports on the development of an assessment rubric designed to examine mathematical creativity in written problem-solving. The rubric operationalises three widely recognised characteristics of creativity (fluency, flexibility, and novelty) and is intended for use with curriculum-aligned mathematics problems. The rubric was applied to written responses from 19 preservice secondary mathematics teachers (PSMTs) who worked on a multiple-solution problem involving the approximation of a quotient of two fixed, co-prime positive integers. Analysis of the responses revealed that, while PSMTs were generally fluent in generating more than one solution approach, flexibility across solution types and evidence of novel strategies were less frequent. Overall, the creativity levels demonstrated across the three dimensions were modest to moderate. These findings suggest that teachers (both pre-service and practising) may require more explicit opportunities to engage with mathematical creativity within teacher education and development programmes.		

The seminar will discuss the development of the rubric and illustrative examples of PSMTs' solutions, with a particular focus on how such an assessment tool can be used formatively in teacher education and professional development to support teachers in fostering mathematical creativity in their classrooms.

7.10b	Aantjes, Max “It’s not per se about the proof!”: The how and why of proving mathematical claims in low attainment groups	
RPS	9-16	Practitioner, Teacher, Teacher Educator, Researcher, PD Lead, Curriculum Developer
Mathematics education researchers have called for all students across all levels of education to verify and explain the truth of mathematical claims, such as area formulas. Several studies have shown that this ‘proving’ of claims is accessible from primary level onward. Yet, in England, experiences of proving remain reserved for certain groups of students. In secondary schools, students are commonly grouped by attainment at class level. Low attainment groups reportedly experience fewer opportunities for verifying and explaining claims. My research aims to bring together researcher and teacher perspectives on the challenges and opportunities for proving in low attainment groups. I conducted a case study of the NCETM’s Teach for Mastery initiative for Key Stage 3 (Year 7 to 9), including a discourse analysis of policy documents, teacher interviews, and teacher focus groups, for which ethical approval was granted by the University of Cambridge. I focus on a surprising finding that, as a teacher acutely remarked, “it’s not per se about the proof!” Participating teachers commented on opportunities to make proof representations accessible so that low attaining students can ‘reuse’ them in future problem solving or ‘revise’ previous content. I pair these proposals with recommendations regarding the teaching of proof in the mathematics education research field. These sets of proposals converge and diverge in ways that call for research and practice partnerships; their comparison reveals meaningful opportunities but also risks for proving in low attainment groups of relevance to curriculum design, professional development and further research into the teaching of proof.		

7.11	Hough, Sue Teacher analysis of student learning and views of progress within a Realistic Mathematics Education context	
IWAD	11-16+, FE	Teacher, Teacher Educator, Researcher
This paper reports on a preliminary analysis of seventy secondary school mathematics teachers’ responses to a survey designed to capture their understandings of student progress within a Realistic Mathematics Education (RME) based curriculum (Gravemeijer, 2020). The research took place in a Multi-Academy Trust which prioritises mixed attainment and has a long- standing connection to RME in the founding school. The Trust comprises five further secondary schools three of which are new schools and two of which are established schools that have been absorbed into the Trust. Teacher development is supported by Trust-wide professional development emphasising a non-standard view of progress and the importance of teacher noticing in		

pedagogical choices (Mason, 2002). Teachers new to the Trust attend additional sessions focussing on RME pedagogy.

The survey asked teachers to interpret student solutions and outline next steps for student progress. Other questions involved identifying informal methods that students might use to solve problems involving negative numbers and speed. Finally, teachers were asked to identify their priorities for pedagogic development and their perceptions of the Trust's vision of learning. Analysis of teachers' responses focuses on their proximity to an RME approach in terms of the extent of their teaching experience and the length of time within the Trust.

Gravemeijer, K. (2020). Emergent modelling: an RME design heuristic elaborated in a series of examples. *Educational Designer*, 4 (13).

Mason, J. (2002). *Researching your own practice: The discipline of noticing*. Routledge.

Session Eight 14:05 - 14:55 Saturday 24th October

8.1a

Macey, Darren

Unlocking statistical reasoning: Using assessment to influence pedagogy

RPS

11-16, ITE, CPD

Practitioner, Teacher, Teacher Educator, Researcher,
Consultant, PD Lead, Curriculum Developer

In an education system where the demands of high-stakes testing can dominate teaching and learning practices, the form and format of assessment items often has a disproportionate impact on how teachers and students conceptualise mathematical knowledge and skills. In this session we will explore a range of statistics assessment items and how they can be used to support positive changes in pedagogy.

Recommendations for improving statistics education have been remarkably consistent since the early 1990s. From Cobb (1992) through GAISE I (2007) and GAISE II (2020) the case has been made for a greater focus on developing learners' statistical reasoning and thinking through the embedding of a statistical problem solving cycle, more experience with real or realistic data and problems, greater emphasis on interpretation and critique and fewer recipes and procedures. This session will explore the initial results and implications of a multiple-case-study project which asked how can "teaching to the test" be leveraged to change classroom practice to align better with these recommendations?

Two maths departments took part in the study, in which teachers were tasked with preparing their year 9 classes for an interim statistics assessment instrument designed using items developed for the LOCUS project (<https://locus.thinkdataed.org/>). Using a design-research approach, reflective diaries and group interviews with participants were analysed used to further refine the assessment instrument and identify any design elements of the assessment that provoked changes to classroom practice.

In this session will explore the design choices behind the assessment instrument and consider how the findings could be practically applied.

8.1b

Nye, Zoe

Developing Graph Sense: Extending Graph Comprehension in the Classroom

RPS

9-16+, FE, adult, ITE,
CPD

Practitioner, Teacher, Teacher Educator, Researcher, PD
Lead,

Graphs are a central feature of school statistics, yet many students leave secondary education able to construct and read them without being able to explain what they show or use them to inform decisions. This reflects a broader tension between the aims of statistical literacy and the enacted curriculum, where teaching is often shaped by assessment practices that prioritise procedural competence over interpretation.

This research draws on lesson observations and interviews with secondary mathematics teachers in England to examine how graphing is taught in practice. Teachers described graph work as dominated by methods that secure marks, with relatively little emphasis on interpretation.

Students were seen to perform procedures successfully but struggled to explain meaning, draw conclusions, or apply graphical information in unfamiliar contexts.

Building on existing models of graph comprehension, this research proposes an extended graph sense hierarchy. In addition to established levels such as reading the data, reading between the data, and reading beyond the data, the model incorporates two further dimensions emerging from classroom practice: drawing the data (graph construction) and interweaving data from graphs (applying information across contexts). These additions reflect both the cognitive demands of graphing and the increasing complexity of assessment tasks.

The seminar will focus on the development of this hierarchy and its implications for teaching. It will argue that without explicit attention to higher-order graph sense, particularly interpretation and transfer, statistical literacy will remain underdeveloped in secondary classrooms.

8.2	Hoskyns-Staples, Lou; Hackett, Helen Beyond attainment: improving girls' participation in mathematics through practitioner research	
IWAD	5-14, CPD	Teacher, Teacher Educator, PD Lead, Curriculum Developer
Despite often attaining as well as, or better than boys, many girls report lower confidence in mathematics. They are more reticent in mathematical discussion and less likely to see themselves as mathematicians. This has implications for their longer-term engagement with STEM. This workshop draws on a three-year Research and Innovation Work Group (RIWG) across two maths hubs, where teachers worked collaboratively to explore how classroom practice might better support girls' participation in mathematics. The project brought research and practice together through a structured professional learning model, combining face-to-face sessions, engagement with research and collaborative planning and refinement. Teachers focused on self-efficacy, spatial reasoning, collaborative problem solving and oracy, using iterative, evidence-informed cycles aligned with the EEF implementation model to plan, trial and refine approaches in their own classrooms. Across schools and phases, similar patterns emerged. Girls' confidence was not fixed, but shaped by classroom structures and expectations. Approaches that focused on collaborative problem solving, structured talk and opportunities to develop spatial reasoning supported greater participation and reduced anxiety. In many cases, this led to noticeable shifts in engagement and, over time, attainment. In this session, participants will take part in a structured collaborative task and reflect on patterns of participation. The workshop will share practical approaches that can be used in the classroom and adapted to different contexts. This work suggests that the issue is not that girls need different mathematics, but that they need better access to participation, and this is within our power to change.		

8.3	Bee, John Dial up the depth: exploring mathematical structure	
IWEMA	0-16, UG, PG, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
This session explores how teachers can “dial up the depth” in primary mathematics by foregrounding mathematical structure as the central driver of deep understanding. While curriculum guidance often encourages moving beyond surface-level procedures, many classroom approaches still rely on context-based hooks or task complexity to create the impression of challenge. This session argues that genuine depth is instead achieved when learners are supported to attend closely to the underlying structures, relationships, and invariants that shape mathematical ideas. Drawing on variation theory and the purposeful use of examples, the session illustrates how carefully designed tasks can help pupils discern what matters, what changes, and what stays the same within a concept. Participants will see how small but deliberate tweaks, such as manipulating number composition, adjusting representations, or sequencing examples to highlight contrast, can make structural features visible and promote mathematically intelligent practice for all learners. Practical classroom examples will demonstrate how structural attention enables pupils to generalise, reason, and make connections across topics, reducing cognitive load while raising expectations. The approach challenges the common misconception that “greater depth” is an attainment label reserved for a few; instead, it reframes depth as a pedagogical entitlement that helps every child think more mathematically. Attendees will leave with a repertoire of tasks, example sets, and design principles that can be immediately applied in EYFS, KS1 and KS2 KS3 classrooms. By repositioning structure at the heart of teaching, we can ensure that depth is not an add-on, but the natural outcome of high-quality mathematical thinking.		

8.4a	Kassim-Lowe, Tazreen Stem Sentences Beyond Over-ritualisation in Primary Mathematics Classrooms	
RPS	5-11	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Consultant, PD Lead, Curriculum Developer
In a recent doctoral study, stem sentences - a speaking scaffold used in some primary mathematics classrooms in England - were theorised, reconceptualised and problematised with the support of Anna Sfard's theory of commognition as a lens. This research-practice seminar focuses on the routine domain of commognition and argues that stem sentences are in danger of being over-ritualised: where the act of vocal repeating, they are associated with, is seen as the object of learning as opposed to a ritualised embodiment of this discursive mediating tool or discursive object (d-object). The session uses episodes from the classroom to demonstrate over-ritualisation and deritualisation and argues for the potential of a deritualised use of stems sentences to support mathematising through deeds and deed-enhancing explorative routines.		

8.4b	Sheard, Simon Reasoned Choices: Teachers' Decision-Making About Manipulatives Through a Maths Mastery Lens	
RPS	3-11	Practitioner, Teacher, Teacher Educator, Researcher
Many teachers can talk confidently about how manipulatives fit into the popular concrete-pictorial-abstract (CPA) heuristic but fewer can justify the pedagogical virtues of choosing one manipulative over another to deliver the specific areas of the primary mathematics curriculum. A complex landscape of Maths Hubs, Multi Academy Trusts and commercial publishers is influencing not only the manipulative choices that are made but how notions of mastery are defined within primary schools. Has the influx of two-sided counters into our classrooms encouraged primary teachers to consider the pedagogical principles behind using these tools or is it the case that a manipulative in a scheme of work which is also available in the classroom cupboard is rationale enough for its use in a lesson? This PhD research adopts a case study approach using qualitative data from online questionnaires (n=130) and follow-up interviews (n=14). Analysis using thematic analysis produced ten themes which this presentation will explore within the context of wider theory, such as a meta-analysis of the efficacy of teaching maths with manipulatives conducted by Carbonneau, Marley and Selig (2013). The research scrutinises partnerships between teachers and Maths Hubs and/or Trusts to better understand teachers' pedagogical understanding of Teaching for Mastery (TfM) principles and how this influences the decisions they make in their classrooms. Preliminary findings suggest that a combination of pedagogy, practicality and preference drive teachers' choices when using certain manipulatives to teach specific concepts.		
8.5a	Skelton, Jo; Robertson, Faye Supporting novice EAL teachers to use oracy techniques in the maths classroom	
RPS	7-16, ITE	Teacher, Teacher Educator, Researcher, SLT, Learning Support, Curriculum Developer
Teaching mathematics in England requires teachers to use oracy as a key component of developing mathematical thinking and understanding. For novice teachers whose first language is not English, there can be challenges relating to using these oracy-based strategies in the secondary mathematics classroom and this can reduce trainees' confidence in articulating complex mathematical ideas to students. In this session, we present the details of a recent intervention project, designed to support novice EAL teachers to be more confident in using oracy strategies as part of their teaching. We also present our initial findings from our impact data. The intervention involved four sessions, drawing on tasks from BBO Maths Hub's ITT Mentoring Toolkit, underpinned by wider research in this area. The impact of the intervention was captured using pre- and post-intervention questionnaires (n=21). More in-depth data was collected in semi-structured interviews with four novice teachers. Our initial findings indicate that the intervention enabled novice EAL teachers to be more confident in their use of oracy in the classroom. In particular, trainees valued explicit training in the techniques, alongside time to practise skills in a 'safe' space with their peers. The integration of research and practice in this area provided a foundation on which trainees were then proactive in developing their own techniques.		

8.5b	Skelton, Jo; Barker, Nathan Towards six stages of mathematical thinking with multilingual learners	
RPS	11-16+, FE, ITE	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
The exploration of mathematical thinking reveals the range of processes used when problem solving, including conjecturing, reasoning and testing. However, there is limited research into how these processes develop in multilingual learners, particularly in relation to how the meaning of a concept emerges. In this session, we present the findings of a research project involving 23 Year 12 learners across two classrooms in Jersey. This project involved analysing a series of maths lessons focusing on Statistics and Further Mathematics. Our findings reveal six stages or levels through which pupils appear to move when shifting from learning a new key term in English, to being able to internally conceptualise and manipulate the target concept. In this session, we present these six stages, illustrated with examples of students' work that reveal indicators of these levels. We will also share the students' perceptions of themselves as multilingual mathematics learners, collected through participation in focus groups, which reveal insights into their student identities.		

8.6a	McIvor, Nick Improvisation as a tool for orchestrating mini-inquiries in the mathematics classroom	
RPS	11-16, ITE, CPD	Teacher, Teacher Educator, Researcher
Government-backed initiatives such 'Teaching for Mastery' are currently directing Mathematics teachers in England towards classroom approaches that offer limited scope for enquiry-based learning. This presentation shares data from a recently completed study that shows how expert mathematics teachers are able to place pupil thinking at the heart of mathematics lessons within the constraints an apparently teacher-centred lesson structure. It argues that they are using strategies closely related to those used by stage performers when they improvise and that those strategies can be articulated in a way that is accessible to current and future mathematics teachers. The presentation brings together the theatre-based ideas of Keith Johnstone – whose seminal work Impro has been in print since 1981 and has sold more than 20 million copies worldwide – with Stein et al.'s (2008) 'five practices' model of orchestration. It offers a description of how teachers might 'plan to improvise' using an approach that is closely related to Stein et al.'s notion of orchestration, without having to commit to the pedagogy of 'problem-based learning' that it was originally designed to facilitate.		

8.6b	Harris, Sophie Strengthening Mathematical Habitus in Schools: What is it and how do we do it?	
RPS	11-16	Practitioner, Teacher, Teacher Educator, Researcher, PD Lead, Mentor/Coach, Curriculum Developer

This paper explores Mathematical Habitus as a lens for understanding and improving pupils' practices and outcomes in mathematics. Grounded in Bourdieu's Theory of Practice (1977), the study draws on survey data from 1,759 Year 9 pupils across 10 secondary schools in the North West of England. The research introduces the Harris Dispositional Framework and examines how pupils' dispositions, particularly their perceived value, relevance, and confidence, shape their learning experiences and outcomes.

Analysis of the survey data identifies distinct groups of learners whose Mathematical Habitus places them at risk of underachievement. These groups are characterised by barriers such as low perceived relevance of mathematics, limited confidence in their mathematical capabilities, and weak alignment between the value they attribute to mathematics and the mathematical practices they encounter in the classroom. The findings highlight the central role of value and relevance in shaping pupils' mathematical practices, revealing how socio-cultural factors can influence the development of mathematical practices.

By operationalising Mathematical Habitus as a measurable construct, this research offers a powerful tool for identifying socio-cultural and dispositional barriers that contribute to persisting inequalities in mathematics education. The paper argues that recognising and addressing these barriers is essential for widening participation and success in mathematics.

The paper concludes with a call to action for researchers and practitioners to work collaboratively to explore how schools can strengthen Mathematical Habitus through curriculum design, pedagogical development, and targeted support for the learner groups identified. By positioning habitus as both a diagnostic tool and a lever for change, the study emphasises the need to evaluate whether enhancing Mathematical Habitus can positively influence GCSE mathematics outcomes, offering a promising direction for future policy and practice.

8.7a	Shah, Rehan; *Sivagnanamoorthy, Ilanthiraiyan Designing proficiency-oriented assessment inventories in undergraduate mathematics	
RPS	14-16+, FE, UG, PG	Practitioner, Teacher, Teacher Educator, Researcher, Curriculum Developer
Concept inventories described as “research-based distractor-driven multiple-choice instruments” have been touted as unique formative/summative assessment tools to gauge learners’ acquired conceptual knowledge and understanding through highlighting common student errors and misconceptions. Within mathematics, while a handful of concept inventories for functions, calculus and statistics have been developed, these tend to focus on limited mathematical proficiencies and key elements of conceptual understanding, making them less suitable for use across other STEM disciplines such as physics, and engineering. To increase the relevance and applicability of such instruments, there is a strong need for HE educators to adopt a broader competency-based approach to assessment design. Motivated by this, this research practice seminar presents findings and outputs gathered from 2 cross-institutional interactive assessment design workshops delivered at Queen Mary University of London and the University of Bath featuring academic lecturers and educators teaching undergraduate mathematics modules across various STEM disciplines. Following a brief		

introduction to concept inventories and examples of mathematical proficiency skills, participants worked collaboratively in groups to design assessment questions centred around key proficiencies (e.g. modelling, visualisation, abstraction, representational translation) on specific mathematical topics from undergraduate mathematics modules.

The results highlight examples of skills-oriented multiple-choice assessment items developed by the participants, supplemented by details of the relevant contextual factors such as year of study, degree programme and course suitable for each question. These will enhance mathematics educators' understanding of assessment design and provide them with a solid foundation to develop new assessment inventories to address skill deficits and improve students' conceptual understanding.

8.7b	Sagredo-Sanchez, Lucia Flipped Learning in University Mathematics: An Action Research Journey to a Practical Framework	
RPS	14-16+, FE, UG, PG, CPD	Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, Curriculum Developer
Flipped learning (FL) has gained considerable attention in education, yet research in STEM higher education, particularly with large cohorts, remains limited. This presentation shares findings from a doctoral action research (AR) study implementing FL in a second-year Engineering Mathematics module with 89 undergraduate students at a UK university, and introduces a practical framework that lecturers can adapt to their own contexts. The study examined which variables most shape the student FL experience, drawing on both quantitative and qualitative methods and grounded in Wenger's Communities of Practice framework. Three iterative AR cycles refined lesson design in direct response to student and lecturer evaluative questionnaires completed after each session, keeping evidence and practice in close and continuous dialogue. Following the cycles, two Nominal Focus Groups (NFGs), a method novel to FL research, brought together findings across all data sources and were central to shaping the final framework. The NFG method combines in-depth focus group discussion with a nominal group technique to produce participant-ranked priority lists, placing contributors at the centre of the research process. The study also examined the nature of student peer interactions with respect to cognitive levels of thinking, and how soft skills evolve through participation in FL. In the session, I will share headline findings from across the study and walk through the evidence-based FL framework that emerged from it, covering preparatory task design, in-class structuring, peer scaffolding, and lecturer support strategies for large groups. There will be opportunity for discussion, and delegates are encouraged to consider how the framework might translate to their own teaching settings.		

8.8	Macmillan, Emily; Ingram, Jenni Why do two negatives make a positive?	
IWEMA	7-16	Practitioner, Teacher, Teacher Educator, Learning Support, PD Lead, Mentor/Coach, Curriculum Developer

Whilst children can use fingers or groups of objects to count whole numbers, there is no similarly intuitive way of representing negative numbers. Teachers use a range of representations for negative numbers in the classroom, including number lines, double-sided counters and analogies. Representations draw on different conceptions of negative numbers and foreground different mathematical structures. Our research with pre-service teachers identified four categories of conception and demonstrated that, as well as moving between representations, the pre-service teachers drew on a range of conceptions of negatives when explaining negative number arithmetic, often without being aware of doing so. Whilst experts may move fluidly between representations and conceptions, this can be confusing for children meeting negatives for the first time, and for those trying to apply their understanding of negatives beyond basic arithmetic, for example when plotting quadratic graphs. This interactive workshop invites participants to reflect on their own practice as they explore a range of negative number representations, construct explanations for a variety of negative number arithmetic problems, and make connections between their explanations and our research-informed framework of conceptions.

8.9	Perring, Richard; Granger, Helen Thinking Coherently About Coherence	
IWEMA	9-16, ITE, CPD	Practitioner, Teacher, Teacher Educator, SLT, Learning Support, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer
A coherent curriculum is undeniably a useful starting point, but coherence in what is maybe up for grabs. In the workshop we will consider aspects of coherence, including thinking about sequencing of topics, but moving beyond this. We will do some maths together, and we'll think about different methods and representations, but we'll also go even bigger, thinking about what we think mathematics is and why the answer to all of these questions is important for students in experiencing a coherent learning journey as they travel through their school life.		

8.10	Chair: Shearman, Jen Townsend, Viv; Shearman, Jen; Morgan, Debbie; Hayden, Eleanor; Hake, Claire; *Coles, Alf 'It's all about structure': How the Primary Mastery Specialist Programme translates into teachers' practice and children's mathematics	
RS	3-14, CPD	Practitioner, Teacher, Teacher Educator, Researcher, Consultant, PD Lead
Primary Mastery Specialists and an NCETM teacher educator join researchers from the NCETM and the University of Bristol to discuss the impact of Teaching for Mastery in England and how key messages in training translated into teachers' practices and children's mathematics. A research project drew on Prediger et al.'s (2019) framing of professional development to explore how the structure of the NCETM's Primary Mastery Specialist Programme effectively		

developed the knowledge and practice of the trainee specialists within and beyond their training year. Researchers observed the three training residentials which each had a focus on mathematical structure (additive and multiplicative), and how a careful selection of mathematical representations could expose the underlying mathematical structure of different concepts (addition, multiplication, fractions). Researchers also noticed an overt focus on structure and representation within observation of the trainee specialists' lessons.

During the symposium the specialists will discuss their motivations for and experiences of taking part in the training. They will present an example of how they demonstrated mathematical structure in their observed lessons, and the ongoing impact of the Primary Mastery Specialist Programme on their development as expert maths teachers and leaders of change. The research team will draw out how the design and implementation of the programme corresponded with observed actions across the three levels: children, teachers, NCETM's teacher educators. While not wanting to draw causal links, we propose that the emphasis on mathematical structure within and beyond the training programme potentially represents a significant shift in mathematical practice in primary schools.

8.11	Benson, Ian; Blatherwick, Sam; *Hunt, Richard From function machines to functional programming and vice versa: a classroom study	
IWAD	9-16	Practitioner, Teacher, Teacher Educator, Researcher, PD Lead, Mentor/Coach, Curriculum Developer
Functional understanding is key to the study of Computer Science and Mathematics. We will report on classroom studies of the benefits for mathematical awareness if, instead of treating these disciplines as separate, we look at them alongside one another. This practice based interactive workshop looks at how functional thinking is being fostered and integrated into secondary classrooms. The work is carried out by a network of teachers and researchers sharing resources through jupyter notebooks and GitHub. After Caleb Gattegno we argue for a pedagogy based on an emerging universe of 'nothings' -- minute energetic shifts that underwrite both cognition and computation. These are represented by chasing arrows in commutative diagrams. We derive practical consequences: emphasising awareness-first, then knowledge integration, with the computer as an amplifier of mental presence rather than as a repository of memory or a drill engine. We will demonstrate success in developing understanding by using a strategic approach based upon function machines and commutative diagrams. These diagrams provide a unified framework for many concepts encountered at Key Stage 3, and in particular for Graph Transformations with Key Stage 4 and Key Stage 5 students.		

Session Nine 15:05 - 15:55 Saturday 24th October

9.1

Hawkins, Jane; Ingram, Jenni; Woollacott, Bethany; *Coles, Alf

Oracy in mathematics

RT

3-16+. FE, CPD

Practitioner, Teacher, Teacher Educator, Researcher, SLT, Learning Support, System Leader, Consultant, PD Lead, Mentor/Coach, Curriculum Developer

Oracy is increasingly recognised as an integral part of mathematical thinking and learning, yet there's a limited field of research in oracy rich education, particularly in the UK, and the potential to connect academic research with classroom practice remains under realised within national discourse. In alignment with BCME 2026's focus on bringing academia and practice more closely aligned, this roundtable will convene researchers, practitioners, and system leaders to interrogate the role of oracy in mathematics education and to consider how communication rich pedagogies can be both theoretically grounded and practically realisable.

Using practitioner research alongside current research into mathematical communication and disciplinary language, the session will explore how structured opportunities for mathematical communication can deepen conceptual understanding, strengthen reasoning, and support equitable participation. We will consider how research on oracy can be translated into classroom routines, effectively implemented to be sustainable, have impact, and feasible within real world curriculum, workload, and accountability constraints.

Participants will engage with provocations around the perceived tensions between fluency and exploratory dialogue, and the role of teacher subject knowledge in facilitating high quality mathematical communication.

The roundtable format will enable collaborative examination of these issues, with a deliberate emphasis on bridging theoretical perspectives with practitioner experience.

This session will be of interest to researchers, teacher educators, school and system leaders, and practitioners committed to strengthening the role of oracy in mathematics classrooms.

9.2

Austin, Graeme

Addressing the biggest inequality in the secondary maths classroom

IWAD

11-16+, FE

Teacher

Girls' participation in A-level maths persists in spite of the overall increase in the number of students taking the subject. While there has been much research on girls' exam performance both nationally and internationally, there has been less work done approaching the issue from the pupils' perspective.

I shall outline my doctoral research project activities and follow that with a group discussion to either critique my proposal or to share experiences of how teachers have engaged with their students to reduce the gender inequality in our subject, depending on audience interest.

9.3	Jacques, Laurie Mathematical possibilities: The 'how and why' or the 'why and how' of designing tasks with variation in mind	
IWAD	5-14, ITE, CPD	Teacher, Teacher Educator, Researcher, Mentor/Coach
The use of conceptual and procedural variation in mathematical task and lesson design is an established pedagogical practice indigenous to Shanghai mathematics classrooms. Over the past decade, these types of variation have also become incorporated into discourses and practices by primary and secondary mathematics teachers in England. However, many teachers still find it challenging to make sense of this non-indigenous practice and to incorporate it meaningfully into their mathematics teaching. In this interactive workshop, I invite participants—whether working in England or elsewhere—to collaboratively explore mathematical tasks drawn from freely available online curriculum materials. Together, we will consider how and why (or why and how) these tasks might be adapted with procedural variation in mind, guided by a set of design principles developed during my doctoral research (2019–2023). Participants will also be invited to reflect on the mathematical opportunities that deliberately varied tasks can open up for pupils, and ways in which teachers might make these opportunities visible in the classroom.		

9.4a	Dowker, Ann; Douglas, Tyra Mathematics Anxiety and Enjoyment in University Students: Exploring the Impact of Course Type, Mathematics A-level, Biological Sex, and Year of Study	
RPS	UG	Researchers
Mathematics anxiety has garnered significant attention from researchers and practitioners, often associated with negative attitudes towards mathematics. In this study, we investigated 50 Oxford University students, examining the impact of degree type, year of study, and sex on various measures of mathematics attitudes and anxiety, general anxiety, test anxiety and mathematics performance. The students included 35 females and 14 males (one participant did not provide this information). 19 studied humanities subjects and 31 studied STEM subjects. 23 were first- year students, and 27 were final- year students. Measures included Evans's (2000) Situational Attitude Scale (including measures of general anxiety, numerical anxiety and mathematics test/course anxiety); Aiken's (1974) Enjoyment of Mathematics Scale; and Sarason's (1978) Test Anxiety Scale (Sarason, 1978). Mathematical performance was assessed through Hitch's (1978) Numerical Abilities Test 3. Correlation analyses revealed positive correlations between all anxiety measures. Maths scores showed significant correlations with maths enjoyment, numerical anxiety, and test course anxiety. ANOVAs showed that STEM students exhibited greater mathematics enjoyment than humanities students, and performed better in the mathematics test, but did not differ in anxiety measures. Females showed higher scores on all anxiety measures and lower mathematics enjoyment, but there were no significant sex differences in mathematics performance. No differences in mathematics anxiety or enjoyment were found based on the year group, suggesting diverse individual trajectories in mathematics anxiety and attitudes.		

9.4b	Crossman, Ric; Shah, Rehan A Landscape Review into Mathematical Anxiety in Mathematics Undergraduate Students	
RPS	14-16+, FE, UG, PG	Practitioner, Teacher, Teacher Educator, Researcher, Curriculum Developer
Mathematics anxiety (MA) is a well-known and extensively studied issue within the discipline of mathematics education (Croft and Gove, 2015). Studies have shown MA affects UK children from as young as five (Carey et al, 2019), and continues to be present among students in the UK at the HE level (Shabab, 2024). One area in which MA has not been commonly considered is UK mathematics degrees. Intuitively, we might think those choosing to study mathematics at university would be immune to MA, but recent work (Pawley, 2025) suggests it may exist in around 25% of newly-arrived UK 1st year UG maths students. This anxiety may persist throughout an undergraduate degree and be associated with reduced academic performance (Juniati & Budayasa, 2020), and may become exacerbated due to the increased difficulty of mathematics at the university level (this relates to the concept of mathematical resilience (Kookan et al, 2013)). These results need further exploration in the UK context. In particular, the possibility of increased MA over time, as students lose their earlier comfort with and sense of achievement in maths (Croft and Gove, 2015) and they potentially fall into cycles of suboptimal academic practice (Jenifer et al, 2023), requires study. In this session, we will summarise the results of our landscape review into mathematics students, how what has been found relates to mathematical resilience, disengagement, and suboptimal academic practice, and map out a route for further work in this space.		

9.5	Xenidou-Dervo, Iro; Trundley, Ruth; Bahnmueller, Julia; Burke, Stefanie; *Gilmore Camilla Stop and Think. Bringing Inhibitory Control into Your Maths Classroom	
IWAD	5-16	Teacher, Teacher Educator, Researcher, SLT, Learning Support, Curriculum Developer
Research consistently links inhibitory control - the capacity to ignore distracting or interfering information and suppress unwanted responses - with mathematics achievement. Yet translating this insight from cognitive science research into classroom practice remains challenging. This workshop draws on our recently published participatory research study (Gilmore et al., 2025) conducted by academic researchers, mathematics education advisors, and primary classroom teachers as co-inquirers, embodying the conference theme of Research and Practice in Partnership. The study investigated how teachers in KS1 and KS2 mainstream primary schools in Southwest England could adapt their classroom practice to support children's inhibitory control during mathematical activities, particularly around adaptive strategy selection. Using a combination of quantitative assessments and qualitative teacher journals and pupil view templates across an academic year, findings showed meaningful changes in classroom discourse, reductions in		

children's use of prepotent strategies on certain problem types, and improvement in children's metacognitive thinking.

In this interactive workshop, we will share key findings and the strategies co-developed during the study. Delegates will then engage directly in mathematical tasks alongside members of our wider research team - spanning academia and classroom practice. Delegates will experience inhibitory control instructional design strategies first-hand and collaboratively adapt or create activities for their own contexts. Participants will leave with practical, research-informed strategies ready to trial in their classrooms.

9.6a	Bottura de Barros, Ana Carolina Educational resources for integrating digital technologies in the Brazilian mathematics curriculum	
RPS	14-16+, FE	Teacher, Teacher Educator, Researcher, Curriculum Developer
Technology integration in mathematics education has been the topic of international research for a long time (Borba et al., 2016; DiSessa, 2018) and is continued in more recent discussions concerning artificial intelligence (Trouche, 2025). Brazil's secondary mathematics education has long struggled to engage students. Curriculum reforms aimed at involving digital technology in teaching, but have not yet provided a clear or convincing direction. This project addresses two persistent challenges: designing tasks that genuinely leverage the mathematical potential of digital technologies, and supporting teachers in adopting innovative practices. We aim to do that by integrating digital technologies in the secondary mathematics curriculum through the design of tasks that adopt the teaching through problem solving (Schroeder, 1990) pedagogical approach. The work adopts a design research methodology that explicitly connects educational research with classroom practice (Swan, 2014). Multidisciplinary collaboration between mathematics educators, school teachers, researchers, illustrators and designers is central to the project, ensuring that theoretical principles and classroom realities inform each other throughout the design process. Learning resources are being developed for Brazilian secondary students and teachers making use of calculators, spreadsheets, programming and artificial intelligence tools. We focus on teaching through problem solving to address in consonance with current mathematics curriculum in terms of concepts, skills and competencies. In this session, we will introduce selected modules, share initial impressions on them, and invite discussion of design choices and emerging principles.		

9.6b	Vernon, Natalie; Button, Tom From Add-On to Embedded: Integrating Technology into Mathematics Teacher Professional Development	
RPS	14-16+, FE, CPD	Teacher, Teacher Educator, PD Lead

Mathematical technology has considerable potential to deepen students' understanding of mathematics, yet its use in classrooms remains highly varied. For teachers, there also remains a lack of consistent access to high quality professional development to allow them to develop their practice, and in our experience, one-day technology specific courses often have limited impact on sustained classroom practice.

This session explores an alternative model: embedding digital technology within subject- specific mathematics professional development. Rather than positioning technology as an additional focus, digital tools are integrated throughout course design and delivery to support teachers' mathematical understanding and pedagogical decision making. This approach aligns with recommendations from the JMC (2023) report Mathematics Education and Digital Technology, which calls for digital technologies to be normalised through their integration into all mathematics professional development.

Drawing on over 20 years of experience at MEI, including work within the Advanced Mathematics Support Programme (AMSP), we will examine how technology embedded professional development is designed and enacted, and how teachers experience this model. We believe that modelling the purposeful use of technology within mathematical explanations supports teachers in seeing technology as an integral pedagogical tool, increasing the likelihood that its use becomes embedded in classroom practice.

We will cover:

- Principles for designing mathematics professional development with embedded use of mathematics technology.
- Teachers' experiences of participating in technology embedded courses.
- Evidence informed recommendations for professional development design and leadership.

9.7a	Stramel, Janet School-Embedded Teacher Preparation: Partnerships That Connect Research and Practice	
RPS	5-11, UG, ITE, CPD	Teacher Educator, Researcher, PD Lead, Mentor/Coach
Bridging the gap between educational research and classroom practice motivated the development of a school-embedded mathematics teacher preparation model designed through a sustained university–elementary school partnership. This work aligns with the conference theme of Research and Practice in Partnership by demonstrating how collaborative design between researchers, teacher educators, and classroom teachers can integrate theory with authentic practice. Grounded in practice-based teacher education, situated learning, and professional inquiry literature, the model embeds coursework within elementary classrooms so candidates learn teaching through guided participation. The project took place in partnership schools serving diverse learners, with the presenter acting as course instructor and researcher. Strategies included co-planning with mentor teachers, structured rehearsal cycles, and feedback protocols aligned with professional standards. Evidence was collected through candidate reflections, observation notes, and performance assessments, analysed for patterns in pedagogical growth and instructional decision-making, following institutional ethical guidelines.		

Findings indicate increased candidate confidence, strengthened mathematical pedagogical content knowledge, and improved readiness to teach diverse learners, particularly in rural contexts. During the session, participants will examine key design features and identify partnership structures transferable to their own settings. This work illustrates how school-embedded preparation can strengthen coherence between research, teacher learning, and classroom practice.

9.7b	Tozer, Karen; Hobday, Elizabeth Creating Space for Mathematical Becoming in Initial Teacher Training	
RPS	5-16+, FE, adult, UG, PG, ITE, CPD	Practitioner, Teacher, Teacher Educator, Learning Support, PD Lead, Mentor/Coach, Curriculum Developer
Primary mathematics teachers need to be both knowledgeable and positively disposed toward the subject if they are to foster mathematical curiosity and confidence. However, many of undergraduate teacher trainees arrived at mathematics sessions with anxiety, avoidance and dread. Consequently, our mathematics curriculum could not be limited to subject and pedagogical knowledge development but had to engage with the affective and identity-related dimensions of mathematics. We designed our lectures to create space to discuss, think critically and reflect. We worked in genuine partnership with trainee teachers, acknowledging rather than dismissing or omitting their perceptions. We supported them to ‘re-author’ their experiences and mathematics identity, enabling them to see the subject in a new light, and consider their future impact. This presentation shares the design principles of the mathematics sessions including exploring trainee teachers’ mathematics epistemology, explicit teaching about maths anxiety and purposefully engaging with their emerging teacher identity. Our approach is one of compassionate pedagogy- meeting the trainee teachers where they are, noticing their emotions or disadvantage and intentionally reducing barriers. Space is created to foster positive professional relationships, where trust underpins action, and our intentions are purposeful and considered. We argue that our approach is not a ‘soft’ addition but a vital part of helping trainee teachers form their professional identity in teaching mathematics. The knowledge, skills and re-authoring they develop can shape their wider studies and future classroom practice. The principles we outline can be replicated by other providers, teachers and courses to enhance mathematics teaching and learning.		

9.8	Hewitt, Dave; Hall, Jonny Learning connections between numbers through Grid Number: an interactive software based on the 100 Number square.	
IWEMA	3-9	Practitioner, Teacher, Teacher Educator, PD Lead
This session will explore a new piece of software (Grid Number) based on the 100 square. This will shortly be available, free, for all to use. The design has been closely linked to some research being carried out by Loughborough University. We will talk briefly about the ideas behind the design of the software before getting everyone exploring some of the computer-generated tasks. We will discuss some of those tasks and reflect upon a learning journey students might have		

when working on those tasks. There is also a ‘free play’ option with the software and we will ask participants to work in small groups to consider ways in which a teacher might use this to work with a group of students. Finally, we look at connections between this software and some research findings behind the use of Grid Algebra, which is currently freely available at gridalgebra.com. **PLEASE BRING WITH YOU A LAPTOP OR AN IPAD/TABLET**, if possible, as the session will involve active exploration of the software along with small group and whole group discussion.

9.9	Beardon, Toni; Clausen-May, Tandi Putting Project Zero Pedagogy of Play research recommendations into practice: incorporating mathematical games into lessons and encouraging mathematical games at home	
IWEMA	3-16, ITE, CPD	Practitioner, Teacher, Teacher Educator, Learning Support, PD Lead
The workshop draws on the findings of the Project Zero Pedagogy of Play Research, and the freely downloadable PoP book published in 2023 reporting on this large-scale international research. The focus will be on putting the recommendations of this research into practice in the teaching of mathematics. The workshop will involve the participants in trying out, and critiquing, some of the many mathematical games from the books: ‘Let’s Play Mathematically AIMING HIGH Family Games’ and the teachers’ book ‘Let’s Learn Mathematics Through Play’. Spiral learning from early years to leaving school is served by related games and different versions of the games. Participants will discuss the suitability of these games for teachers to use in lessons, the learning objectives, and the suggestions for families to play the games at home. As part of a mission to make available and useful to teachers in under-developed countries the rich resources we have in the developed world, the games have been tried and tested in classrooms around the world. Teaching resources and problem solving activities have been adapted to make them suitable for under-resourced schools, and for the large classes that are common in Africa. The objectives of this workshop are to introduce participants to a subset of this collection, namely mathematical games, and to discuss how playful learning could help students to deepen their mathematical knowledge and understanding and to develop the transferable skills needed to meet the challenges and thrive in this rapidly changing world.		

9.10	Chair: Hodgen, Jeremy Marks, Rachel; Geraniou, Eirini; Foster, Colin The effectiveness of teaching strategies and approaches in secondary mathematics: Evidence from a systematic review and meta-analysis	
RS	11-16, CPD	Teacher, Teacher Educator, Researcher, SLT, System Leader, Consultant, PD Lead, Curriculum Developer
In this session, Jeremy Hodgen, Rachel Marks and Eirini Geraniou will present the findings from their recent systematic review and meta-analysis focused on the teaching and learning of		

mathematics at Key Stages 3 and 4. The review was funded by the Education Endowment Foundation (EEF) and is being used to inform an EEF Guidance Report on the teaching of secondary mathematics. Building on previous systematic reviews by the team and other colleagues, the review was based on a pre-registered protocol. We identified more than 400 experimental studies from around the world that met our inclusion criteria. Although the strength of evidence varied, there was sufficient evidence to conduct a meta-analysis of the evidence relating to sixteen topics, including attitudes interventions, approaches to oracy in mathematics, problem-solving, professional development, direct instruction, technology use and metacognition. Additionally, we considered the wider evidence relating to the broader issues of girls and mathematics, transitions between school phases, the teaching of high prior attaining students and support for students from disadvantaged backgrounds.

Jeremy Hodgen (Chair) will present an overview of the study and consider the findings on oracy and professional development in detail. Rachel Marks will discuss the state of the field in general and outline our findings relating to the broader issues. Eirini Geraniou will then consider the cases of technology use, computer-aided instruction and intelligent tutoring systems. Finally, Colin Foster, who was not directly involved in the study, will respond to the presentations, considering the implications for both teaching and future research.

9.11	Kathotia, Vinay; Rumbelow, Michael; *Megroureche, Charlotte Making mathematics	
IWEMA	3-16+, FE, adult, UG, ITE, CPD	Practitioner, Teacher, Teacher Educator, Researcher, Learning Support, Consultant, Curriculum Developer
Making with blocks, paper, string and other materials has long been a key activity in Kindergarten, and can be equally supportive in developing visuospatial reasoning and mathematical behaviours at primary, secondary and university level. In this hands-on workshop we will be exploring mathematics through building symmetrical and asymmetrical structures using a range of materials (wooden and other cubes, paper and fabric, sticks and yarn) and processes such as joining, slicing, drawing, folding and braiding. The workshop invites teachers, educators and researchers, to explore mathematics as an embodied and material practice – where bodily actions and working with materials do not simply represent but constitute mathematical activity and concepts. Drawing on research into bodily action, artifacts, affect, and technology, that seek to break unhelpful divides between cognitive, affective and material processes, workshop participants will engage in activities that enact and foster mathematical behaviours by bringing together movement, making, and sensory experience. Through shared experimentation and reflection, the workshop will offer a space to rethink how mathematical ideas emerge through bodies, materials, conversations and collaborative making. There will be two group-work tables at the session. One with activities on making crystallographic structures that have been trialled with Early Years and primary-age learners, and another exploring surfaces and knots, trialled with upper-primary, secondary and university-based learners. In the initial half-hour, participants will be free to spend as little or as long as they wish at either table, followed by twenty minutes to discuss implications for research and practice.		

All materials will be provided.

Posters

Helliwell, Tracy; Ingram, Jenni; Baldry, Fay

Mathematics teacher education research group

Mathematics teacher educators work at the intersection of research and practice, yet opportunities to connect with others researching mathematics teacher education and professional development in the UK are limited. A new BSRLM working group is bringing together colleagues interested in developing research in this area, including those who would like to become more research-active.

This poster introduces the working group and invites the wider BCME community to help shape its future. Emerging areas of interest include researching problems of teacher educator practice; understanding and theorising high-quality mathematics teacher education and professional development; developing collaborative, multi-site research; exploring mathematics teacher educator knowledge and expertise; and strengthening methodologies suited to researching our own practice.

We particularly welcome mathematics teacher educators across different phases, settings and career stages who are interested in developing rigorous, theoretically informed research into mathematics teacher education. Our ambition is to build collaborations that address substantive questions about mathematics teacher education, develop conceptual and methodological contributions to the field, and produce research of relevance to the international mathematics education research community.

Horner, Kate

Are our maths lesson titles causing anxiety and inhibiting fluency?

We all know that groan from learners when the lesson title appears and it's a topic they dislike. We've all heard it. But is that effect more than simply the theme song for algebra lessons? Could the wording of our lesson titles actually be creating barriers to learning for our students?

Certainly in the Post-16 classroom, levels of maths anxiety are incredibly high, and the second a title appears on a topic they have had previous negative experiences with, many of our learners shut down. They decide that this will be yet another maths lesson that they struggle in, their motivation becomes even lower and they continue to feel that maths is not for them. This instantly creates a barrier to learning which is unlikely to be resolved over the next 1-3 hours of the lesson. Or if learners do manage to break through that initial panic, they end up putting maths topics firmly into silos- Pythagoras is only for geometry questions, algebra is only for algebra questions etc.

But what if we could change this? What if we could use lesson titles which intrigued our learners and started to nurture their curiosity? Titles which made them think, this could be important for me...I'm going to give this a go" and that helped them to see that maths is all one large

Ingram, Jenni

What can we learn from PISA?

What can PISA tell us about young people's experiences of mathematics? This poster shares key findings from PISA 2025, looking at how mathematics performance differs between girls and boys, and exploring the attitudes and experiences that are associated with higher and lower performance. It will also look at how mathematics performance has changed over time and what this might tell us about the wider picture of mathematics education in England.

Alongside the latest PISA 2025 findings, we will revisit some of the mathematics-specific questions from PISA 2022 to explore what students told us about their confidence, motivation and experiences of learning mathematics.

Finally, the poster will introduce a new interactive online dashboard, giving you the opportunity to explore the PISA data for yourself, investigate the questions that interest you, and see how different groups of students compare.

Marks, Rachel; Golding, Jennie

Teaching and Learning Mathematics with Meaning: Using and Applying TIMSS

This poster presents key ideas, classroom resources, and illustrative case studies from the research-based open access book *Teaching and Learning Mathematics with Meaning: Using and Applying TIMSS*. The book responds to the international challenge of supporting confident, equitable mathematics learning by helping teachers develop students' mathematical understanding, meaning-making, and capacity to use mathematics effectively in real-world contexts.

The book is a practice-focused resource for teachers and teacher educators. Drawing on the TIMSS framework, findings, publications, and released assessment items, it demonstrates how international research evidence can be translated into meaningful classroom practice across primary and secondary education. The book provides classroom-tested activities, didactic guidance, and examples of how TIMSS resources can be used to enrich teaching, deepen conceptual understanding, and strengthen opportunities for mathematical reasoning, application, and problem solving.

The poster will showcase selected examples and case studies from the book, highlighting ways in which teachers can use TIMSS items and data to support planning, classroom discussion, and assessment. Attention is given to strategies that help students connect mathematical ideas, engage with authentic contexts, and develop mathematical meaning.

Key takeaways for delegates will include evidence-informed approaches to using international assessment resources, insights into promoting meaningful mathematics learning, and adaptable classroom materials suitable for a range of educational settings. Delegates will have the opportunity to examine copies of the open access book and its accompanying teacher resources. Printed copies of the accompanying Teacher Snippet will also be available for delegates to take away and use within their own professional practice.

Newton, Martin

Should This Work? Why the MEI FE Maths Challenge Succeeds with Low Prior Attaining Students

A mathematics competition for low prior attaining resit students should not work. Yet the MEI FE Maths Challenge has grown from a small pilot in three Stoke on Trent colleges in 2019 to a national programme reaching over 58,000 students across 124 FE colleges.

This poster explores why this apparent contradiction matters. Low prior attaining 16–19 students in FE are mandated by education policy to study mathematics after not achieving a GCSE grade 4 or above at the end of Key Stage 4. Many arrive with fragile mathematical identities and a belief that mathematics is “not for them”. Mathematics competitions are traditionally reserved for high achievers; for these students, simply being able to take part can be identity shifting.

Drawing on practitioner reflections, the poster examines how the FE Maths Challenge embeds inclusion through whole cohort participation, paired working and playful, low stakes competition. Tasks, designed by MEI, support fluency, reasoning and problem solving (AO1–3), while prioritising mathematical discussion, deeper understanding and collaboration. The competitive element—well established and valued within FE vocational education—appears to motivate rather than marginalise.

Student feedback consistently highlights increased confidence, motivation and willingness to engage with mathematics, with some anecdotal evidence of improved attainment. The Challenge has often become a whole college event, fostering professional dialogue and cross departmental collaboration. Situated within current FE policy emphases on inclusion, belonging and thriving, this poster invites delegates to reconsider who mathematics competitions are for, and whether similar approaches might positively reshape relationships with mathematics across KS2–4 and adult learners.

Rossi, Serena; Caviola, Sara; Cipora, Krzysztof; Xenidou-Dervou, Iro

The cognitive cost of anxiety: individual differences in arithmetic under verbal interference

Mathematics anxiety (MA) impairs arithmetic performance by taxing working memory (WM) resources, as proposed by the Processing Efficiency Theory (Eysenck & Calvo, 1992; Eysenck et al., 2007). Building on prior work examining MA and WM in primary school children, this study extends the investigation to include General Trait Anxiety (GA) and Test Anxiety (TA), with two aims: (1) to identify distinct anxiety profiles combining multiple anxiety types; and (2) to examine whether these profiles differed in the cognitive cost imposed by verbal interference on mental arithmetic.

428 children aged 9–10 completed self-report measures of MA (testing and learning contexts), GA, and TA, alongside standardised mathematics, fluid intelligence, and verbal WM tasks. A dual-task paradigm was used, in which arithmetic was performed alone or concurrently with a word-recall task (verbal interference).

Latent Profile Analysis identified four distinct anxiety profiles. Profiles differed in how verbal interference affected arithmetic and WM performance, with higher anxiety, particularly MA related to learning new content, associated with poorer mathematics achievement and cognitive outcomes overall. These findings highlight that different anxiety types are associated with distinct cognitive profiles, underscoring the value of person-centred approaches when examining individual differences in mathematics performance.

Webb, Cordelia; Papatsouma, Ioanna

PD: MaCurrthemathematics Education course at Imperial College London

Whole generations of mathematics teachers in UK schools have limited formal training of their own in mathematics post-GCSE, or in mathematics pedagogy. To address this, Imperial College London is offering a new course on specialist mathematics education, offering a pathway to formal recognition for participants, and a bank of open resources to support best practice across the sector.

Aiming to seed a community of practice, the course will offer weekly opportunities for reflective discussion and live lecturer and peer support. Course content will be self-paced and delivered through asynchronous video content in order to best fit around busy teachers' schedules.

Contributors		Sessions
Aantjes	Max	7.10b
Allen	Stuart	5.10
Amoo-Gottfried	Jason	4.9
Apostolidu	Masha	3.6a
Archer	Rosa	4.1
Ash	Andy	3.4b
Ashmore	Lisa	4.5a
Austin	Graeme	9.2
Bahnmueller	Julia	9.5
Baldry	Fay	1.2 ; 2.1a ; 5.2
Baldwin	Claire	4.7
Bamber	Sally	3.7a ; 4.1
Barker	Nathan	8.5b
Barrett	Judy	6.7a
Bartoli	Marisa	4.8
Beardon	Toni	9.9
Bee	John	8.3
Benson	Ian	8.11
Berry	Anna	4.3
Berry	Miles	2.11
Birkhead	Amy	5.4b
Biza	Irene	5.11
Blatherwick	Sam	8.11
Blinko	Janine	7.2
Borthwick	Alison	2.5 ; 7.2
Bottura de Barros	Ana Carolina	9.6a
Briggs	Tom	2.6



Brignell	Chris	2.10 ; 3.10
Bryant	Isabelle	4.12a
Burke	Stefanie	2.5 ; 5.10 ; 7.2 ; 9.5
Butler	Rob	5.5a
Button	Tom	5.5a ; 9.6b
Caviola	Sara	*Poster
Chun-Yeung Lee	Gabriel	1.10 ; 4.10
Cipora	Krzysztof	*Poster
Clausen-May	Tandi	9.9
Coe	Nicola	3.5
Coles	Alf	4.12a ; *5.1 ; *8.10 ; *9.1
Cooper	Joe	1.8 ; 4.7
Cripwell	Jon	1.4a
Crisan	Cosette	5.6a
Crossman	Ric	9.4b
Crozier	Katie	5.10
Cull	Gráinne	5.3a
Dale	Chris	1.1
Darwin	Sophy	1.6b
Dixon-Jones	Sarah	1.6b
Dolling	Natasha	1.1
Donaldson	Becky	1.8 ; 4.5b
Douglas	Tyra	9.4a
Dowker	Ann	9.4a
Eadie	Phil	5.10
Eastaway	Rob	2.6
Edmiston	Alan	3.1a ; 4.2
Evans	Sue	2.4b



Eves	Alison	4.11b
Fitzpatrick	Agnes	3.7b
Forde	Jennie	3.1b ; 5.1
Foster	Colin	7.7b ; 9.10
Francome	Tom	7.1b
Fu	Arya	5.5b
Gee	Catherine	5.10
Geraniou	Eirini	5.6a ; 9.10
Gifford	Sue	7.9
Gilmore	Camilla	*9.5
Goodland	Jane	1.7 ; 2.7 ; 7.4
Granger	Helen	5.1 ; 8.9
Griffiths	Rose	1.3
Gripton	Cath	1.3 ; 3.10 ; 4.10 ; 6.7b
Hackett	Helen	8.2
Hake	Claire	8.10
Hall	Jonny	9.8
Hamilton	Caroline	2.9
Harbison	Lorraine	*7.1a
Harris	Sophie	8.6b
Hataru	Vesife	7.10a
Hawkins	Jane	1.12 ; 9.1
Hayden	Eleanor	8.10
Helliwell	Tracy	4.12a ; Poster
Hewitt	Dave	9.8
Hill	Clare	3.6b
Hilliam	Rachel	6.1b
Hobday	Elizabeth	9.7b



Hodgen	Jeremy	1.10 ; 9.10
Hopper	Alison	2.2
Horner	Kate	Poster
Hoskyns-Staples	Lou	8.2
Hough	Sue	4.8 ; 7.11
Huang	Liyang	*2.3
Hunt	Richard	*8.11
Huyton	Pip	*7.2
Hyde	Ros	4.1
Inglis	Andrina	5.6b ; 7.5
Ingram	Jenni	1.2 ; 2.1a ; 4.12b ; 5.2 ; 8.8 ; 9.1 ; Poster
Jacques	Laurie	9.3
Jagdev	Manjinder	6.3a ; 7.4
Jayson	Natalia	5.7a
Johnston-Wilder	Sue	*3.6a
Joubert	Marie	2.10 ; 4.11a ; 6.7b
Kasimu	Osman	6.3b
Kassim-Lowe	Tazreen	8.4a
Kathotia	Vinay	9.11
Kaur	Balbir	1.7 ; 4.10 ; 7.4
Kerrison	Lois	3.4a
Kimber	Elizabeth	2.1b ; 4.12b ; 5.2
Kingston	Denise	6.7a
Knight	Gill	2.4a
Lam	Tung Ken	2.12
Lancaster	Andrea	7.9
Leakey	Sarah	5.8 ; 7.1a
Lee	Stephen	2.10 ; 3.10



Lewis	Matt	5.1 ; 6.6b
Li	Hui	4.4b
Li	Shuhui	2.3
Liu	Bohan	*2.3
Macey	Darren	5.6a ; 8.1a
Mackie	Kieran	5.4a
Macmillan	Emily	1.2 ; 2.1a ; 5.2 ; 8.8
Malkin	Elliot	4.12a
Marks	Rachel	1.3 ; 9.10 ; Poster
Marsh	Natalie	5.10
Marshall	Allysse	4.11b
Martin	David	6.4
McCormick	Tom	7.8
McGill	Shauna	1.6a
McIvor	Nick	8.6a
Megroureche	Charlotte	*9.11
Mio	Cristina	1.7 ; 7.4
Morgan	Debbie	8.10
Nardi	Elena	5.11
Newton	Martin	Poster
Nichols	Kathryn	1.6b
Nitkin	Oxana	1.9
Norley	Kevin	4.6b
Norris	Jennifer	2.10 ; 4.11a ; 6.1a
Noyes	Andy	1.10 ; 2.10 ; 3.10 ; 4.10
Nye	Zoe	7.3 ; 8.1b
O'Brien	Dan	2.3
Oakes	Dominic	5.3b



Oldham	Elizabeth	1.6a
Oughton	Rachel	1.6b
Owens	Emma	1.10
Palmer	Helena	4.4a
Parkes	Sam	1.7 ; 6.6a ; 7.4
Perring	Richard	1.12 ; 8.9
Pescetelli	Rita	1.5
Pope	Sue	2.12 ; 4.2
Powell	Jake	3.10
Price	Rhiannon	3.7a
Pritchard	Chris	4.2
Proulx	Jerome	4.6a
Rempe-Gillen	Emma	4.5a
Robertson	Faye	8.5a
Robinson	Paula	6.6a
Rossi	Serena	Poster
Rowlandson	Paul	1.4b
Rowlett	Peter	4.2
Rumbelow	Michael	2.3 ; 9.11
Rycroft-Smith	Lucy	5.7b
Sagredo-Sanchez	Lucia	8.7b
Shah	Rehan	8.7a ; 9.4b
Sheard	Simon	8.4b
Shearman	Jen	8.10
Sirl	Dave	3.10
Sivagnanamoothy	Ilanthiraiyan	*8.7a
Skelton	Jo	3.1b ; 5.2 ; 8.5a ; 8.5b
Smith	Cathy	2.1b



Southall	Ed	7.6b
Stramel	Janet	9.7a
Szatkowski	Lisa	1.10 ; 4.10
Tate	Brook	2.9
Taylor	Robin	7.9
Thein	Khin Aye Chan	4.4b
Thomas	David	3.7b
Thomas	Greg	4.3
Thouless	Helen	7.6a
Tierney	Nicola	1.11a ; 7.4
Townsend	Viv	2.4b ; 6.6b ; 8.10
Tozer	Karen	9.7b
Trubridge	Nicola	2.4b
Trundley	Ruth	2.5 ; 4.4a ; 5.8 ; 9.5
Turvill	Rebecca	5.1
Vernon	Natalie	9.6b
Wake	Geoff	5.8
Wallis	Rachel	1.11b
Walsh	Glenda	2.8
Waterfield	Sam	6.5
Watkins	Joe	4.5b ; 7.7a
Watson	Anne	5.9
Webb	Cordelia	Poster
Wheelhouse	Vicky	2.2
Williams	Helen	2.8 ; 7.2
Woollacott	Bethany	1.10 ; 4.10 ; 9.1
Wright	Pete	1.7 ; 7.4
Xenidou-Dervou	Iro	9.5 ; Poster