Conference Session Outlines

Opening Plenary

Les Staves. The roots of maths for children with very special needs

The presentation will discuss why it is important to have a curriculum that will encourage relevant math's to grow for all children, including those who are at the earliest levels of learning. It will review the nature of relevant content and approaches to teaching and learning.
Its starting points may relate to children who have not yet reached numeracy or are well behind age-related expectations. But I hope it will provoke consideration if its messages are relevant at later levels.

Closing Plenary

Kinga Morsanyi. Dyscalculia: What it is and what to do about it

Dyscalculia (specific learning difficulty in mathematics) is a condition that affects about 6% of the school-age population. Although dyscalculia is equally prevalent as dyslexia, and it can seriously affect people's life chances, it is neglected by both educational professionals and policy-makers.
Currently, in the UK (and in many other countries), a diagnosis of dyscalculia is almost non-existent, and educational support and official recognition is lacking.
In this talk, I will present information about current conceptualisations of dyscalculia, how it can be identified, and how it can be discriminated from other conditions. I will also introduce a new screening tool to identify pupils with mathematics difficulties in the classroom and make some recommendations for best practice.

Bio: Dr Kinga Morsanyi is a Senior Lecturer in Mathematical Cognition at Loughborough University. She has broad research interests, which lie at the intersection of research into mathematical cognition, reasoning and decision-making. Currently, one of her main research interests is in dyscalculia. Dr Morsanyi is researching the cognitive profile of individuals with dyscalculia, the demographic risk- and protective factors, typical symptoms (including problems in everyday settings), and co-morbidity with

other developmental conditions. She is also leading the development of an app (Numeralis), which will comprise a standardized screening instrument for dyscalculia and tasks to assess the broader cognitive profile of learners. Dr Morsanyi is an associate editor or editorial board member of several academic journals, a member of the UK Young Academy, and an advisory board member of the Dyscalculia Network.

Alison Roulstone. Practical strategies and interventions to support learners with difficulties in mathematics. i-CAN Maths Workshop Session

i-CAN Maths is a maths magnetic counting frame that uses a Hungarian number frame (double five domino pattern). i-CAN Maths can help learners build good number sense using the maths mastery approach. Designed to be used one-to-one, in small groups and with the whole class i-CAN Maths is fully flexible and each session can be tailored to meet learners' specific needs. i-CAN Maths encourages learners to visualize numbers, builds subitizing skills, and develops mathematical reasoning skills and mathematical fluency.

Tracey Roberts. No One Left Behind

Finding the right course for learners is often tricky, even trickier for pupils who are often disengaged or demotivated with education. The session will explore an alternative course for KS4 pupils to enable a positive and successful experience within maths. The qualification in particular will support learners with identified skill gaps in Maths and can be used to support progression or even run alongside GCSE. Come and see what we have learnt from delivering the course at both Levels 1 and 2 along with the changes in pupils' perception to maths following their success, and how we make this work within our curriculum.

Pete Jarrett (Tutorum Learning and Assessment), Naina Singh (LKM School, Nharva, Maharashtra).

Still struggling? Using data and observation to recognise challenges in learning.

This talk introduces an ongoing project that investigates the reasons for learners struggling when exposed to a Mathematics Mastery environment in an Indian rural school. Using data collection focused on observation of 'why' a learner is struggling, and analysis focused on multiple variables, teachers are empowered to recognise the most useful additional interventions at a class, small group, and individual level. Based on this understanding, a teacher development module has been devised that supports new teachers from the community to adjust to mastery teaching and support individual differences. This session will be delivered online from LKM School.

Janet Goring. A graduated approach to supporting pupils with maths difficulties?

Using current research and the findings of the SASC* working group on Dyscalculia and Maths difficulties, this presentation will explore the key barriers to learning maths and consider how students can be supported. As an introduction to a graduated approach, it will focus on classroom strategies and reasonable adjustments to prevent or reduce later difficulties as well as anxiety. It will be an opportunity for participants to evaluate their practice and consider how well they are meeting the needs of their SEND students through discussion with other teachers. Materials will be provided that have been tested and adapted by teachers and SENCos as part of a Maths Hub SEND project to audit and plan support.

Natasha Dolling. How to use technology in the maths classroom to improve inclusion for children with SEND - the session info is the same.

At LEO Academy Trust, we are excited to be at the forefront of using technology to improve inclusion. We believe that technology can be a powerful tool for ensuring that all children have the opportunity to succeed. Technology is being used to help children with SEND access learning, work independently, and overcome barriers to learning.

I am excited to explore the future of technology in education. I believe that technology has the potential to revolutionise education and make it more inclusive for all children. I am excited to see how LEO Academy Trust and other schools continue to use technology to improve inclusion.

Louise Langford. Representations of number- securing core mathematical structures and ideas

This will be a practical session based on my articles in the Equals Magazine (Vol.24 No.3 and Vol.28 No 2) and experience of working with many pupils with Mathematical Learning Difficulties and Dyscalculia. It is appropriate to delegate teaching to all ages and stages, as well as those involved in professional development work.

We will look at a variety of structures, that develop a secure representation of numbers within ten. This will include 'cluster' recognition, building on subitising and the idea of efficiently composing and decomposing number, linked to linear representations and understanding magnitude. We will explore how these representations expose different mathematical structures and ideas, to support retention and fluent application of number facts, enable learners to communicate their mathematical thinking, as well as secure a deep sense of number. Finally, we will consider the importance of core representations as vehicles to 'transfer knowledge' and enable future generalisations.

Louise is a specialist teacher and assessor for Dyscalculia, Primary teacher, co-author of 'A Deep sense of Number' ATM publications (2021) and works as an LLME, as well as a Regional Community Co-Lead with the NCETM.

Lara Lalemi, Creative Tuition Ltd. Beyond the Western Canon: Enriching Secondary School Mathematics Education with Diverse Mathematical Knowledge

In recent years, there has been a growing recognition of the importance of incorporating diverse perspectives and knowledge into educational curricula, especially in mathematics. This talk highlights how traditional mathematics education often overlooks the rich and diverse contributions of global cultures and knowledges, leading to missed learning opportunities for school students to engage with the subject fully. The talk discusses the impact of colonialism on mathematics education and advocates for using an anti-colonial framework to critically examine and enrich the curriculum. By integrating captivating examples from ancient civilizations and indigenous cultures, teachers can encourage school students to gain a deeper appreciation for the universality and interconnectedness of mathematics across societies and with themselves in daily life. Through the incorporation of diverse mathematical examples, teachers can show students alternative ways problem-solving methods and different perspectives, fostering critical thinking and creativity. Moreover, exposure to the accomplishments of mathematicians from non-Western cultures can empower students from diverse backgrounds, allowing them to see themselves as active participants in the field of mathematics.

Magdalene Lake. The vicious cycle of poor reasoning: Putting the horse back before the cart to address inequalities and improve maths attainment for everyone.

Reasoning is fundamental to good maths attainment for everyone, and yet, we often think that pupils must have certain mathematical skills before trying any reasoning, which leads to fewer opportunities for those with lower attainment to develop their thinking, and a vicious cycle ensues. In this session, we will look at who is at risk of this vicious cycle, why reasoning will improve number sense and calculation, and how to improve reasoning when number skills are low.

Rob Jennings – The Dyscalculia Network

The Dyscalculia Network has just signed a deal for a new maths assessment with Jessica Kingsley Publishing. It is due out next year and is entitled … 'The Maths and Dyscalculia Assessment' and is an assessment tool aimed at formulating a focused teaching intervention plan. Come along to this session and find out more!

Dominic Petronzi. Understanding Maths Anxiety

Math anxiety is associated with avoidance and reduced attainment and can define career decisions. But we're still developing our understanding of how and why this develops. Research suggests that this can be grounded in initial experiences with math, and in some cases, children's performance starts to decline from as early as 4 years of age. Research tells us that math anxiety is a complex construct, and this session will look at the distinctiveness of math anxiety, the range of factors that are implicated in its emergence and maintenance and understanding the role of emotions and the cognitive impact. We'll also consider approaches to regulate attitudes and emotions about math, and also explore the movement towards understanding teacher math anxiety and the importance of this.

Tandi Clausen-May. Multiplication Tables: survival strategies for dyscalculic learners

Multiplication and multiplication bonds can present a terrifying challenge to learners who struggle to grasp numbers and numerals. For those who cannot interpret such 'squiggle-based' number sentences as '7 × 8 = 56', the demand that they *learn the multiplication tables* can create an insurmountable barrier which blocks their path to any further development of their mathematical thinking. But by working entirely practically, with rectangular slabs of interlocking cubes, a Slavonic abacus, and our own fingers and hands, we can see all the bonds up to 10 × 10 and manipulate them physically as shapes and patterns rather than as 'number facts'. This can make the multiplication bonds accessible, meaningful, and therefore more memorable. In this session we will explore ways to make, do, and above all understand, not just to 'say', multiplication and the multiplication tables.

Steven Walker - OCR Subject Advisor (Maths). Exam access for all

The presentation will look at the current special consideration regulations, from starting to teach through to sitting the examinations. This is an opportunity for teachers to share their experiences of teaching the content and preparing their students for the exams. We look at the range of qualifications from Entry Level Certificates through to A Level and discuss what other assessment options may be needed in the future.

Steven originally studied engineering before completing a PGCE in secondary mathematics. He has taught secondary maths in England and overseas. Steven joined OCR in 2014 and worked on the redevelopment of OCR's Entry Level, FSMQ and the A-Level Mathematics suite of qualifications. Away from the office he enjoys cooking and travel.