Keynote Speaker – Rachael Horsman – London and York

The room was full of laughing mathematics teachers who were clapping, jumping and scratching their heads at the start of Rachael's presentation. Maths can be fun, and silly.
Rachael shared some of her maths experiences from travelling the world, explaining the universality of the subject and how this can be used to engage young people in lessons in the UK.
We looked at the Tangram in Hong Kong, where it is used at all ages in school for teaching fractions, length, area and even algebra.
We also looked at the use of real money (notes) from nations across the world with the question: Can you afford a loaf of bread? This is an excellent way of looking at exchange rates. Photographs from across the world are another excellent way of thinking about lots of areas of maths.
She demonstrated that teachers can have misconceptions about their learners. On video, one 'lower level' young man said he did not like shape and space, but did like algebra! The perception by others of someone who is good at maths is often that they are nerds or geeks. The Big Bang Theory can be used to show that it is fine to be geeky.
We finished with an extract from a classic Dave Allen sketch on "Teaching your kid time" to show the difficulties we face. It's not easy to teach maths, but it can be fun.
By the way, have you driven to the moon yet?

John Barton

Citizen Maths - London

Citizen Maths is an online level 2 maths course which has been funded by the UFI charitable trust. It is an open online course developed by: Calderdale College, Cogbooks, Desq. Ltd., IOE, OCR and built by Google. The aim is to have an innovative approach.
The analysed data showed that students who have taken the studied the course gave very positive feedback and stated that they enjoyed the course.
The course is being developed and future powerful ideas include: "Scratch" – "LOGO", Uncertainty, Representation, Measuring and Pattern.
The session was very informative. The examples given all related to real life situations though more examples are needed. Some other possible situations were discussed.

Mudasser Khurshid

New approach to GCSE

A very informative presentation on a Nuffield funded project being tried out with resitting maths GCSE students in the north-west.
The proposition is that there are two types of students: those who do something with numbers and those that attempt to make sense of the problem.
The project is based on strategies used for teaching maths in Holland that has been adapted to the IK market. Everything is taught in context to encourage students to make sense of the situation and the use of models and structures which students use to picture the problem/unlock their own methods.
The key idea is to "draw something". They are encouraged to use bars – e.g. the download bar of a computer for percentage conversions and show bar (no scales/no limits).
Results show that those who took part in the project using more common sense to approach problems as a result and are more likely to attempt questions rather that dismiss them.

Ceri Griffiths

NRICH Resources - London

The NRICH workshop was interesting in that it introduced resources in a selection of learning challenges: some with an answer, some with assumptions necessary and some without one specific answer, but all to encourage in-depth thinking and learning.

Jill May

NRICH materials - York

Viv Brown and Andrew Davies took delegates through a varied range of activities. This was very much a hands-on session which put delegates on the spot. Many of these problems involved making assumptions and analysing the results of changing those assumptions. For instance there was a problem involving a ladder and a one metre cube where we would normally use either Pythagoras or trig. However on this occasion, vital information was missing forcing you to assume the length of one of the sides and estimating the answer. Interestingly adjusting the 'assumption' got you very close to the real answer. It made you think – which is what we need to do to our students.
We also looked at tessellating shapes on an app and a fractions/decimals/percentages polygons, matching domino game ideal for small groups.
These activities can be found on the NRICH website.

Sean Tarver

Core maths support programme - York

This session was presented by Doug Drake, Regional Adviser and
Lily Tang, Maths Lead, from the Core Maths Support Programme. Lily teaches Core Maths at Cambridge Regional College.

Doug began the session by outlining why the Core Maths qualification had been developed.

- Industry and universities have stated that school and college leavers do not have the mathematics skills they need in everyday life.
- The UK is unusual in that under 20% of learners study mathematics post-16.

The subject knowledge requirement of the qualification is 80% GCSE Higher Mathematics content and 20% new content. The main difference between GCSE and Core Maths is that Core Maths has a much greater focus on reasoning and problem solving. One of the challenges teachers face is finding problem solving contexts of interest to learners, especially if learners are young with limited life experience.

Lily then continued the presentation from the perspective of a classroom teacher. She teaches two groups of Uniformed and Public Services (UPS) groups, one each of army and police cadets, for two hours per week on a Friday afternoon. The majority of students in the groups have a Grade C at Foundation level, some after re-sitting. Due to good tutorial support attendance in class is over 90%.

In February, Lily considered that the lesson style she was using was not working well and she began to include project work related to learners' vocational areas in the lesson. The first hour of the lesson was taught as before and the second hour was used for project work. Learners worked for three one-hour sessions on a project which was presented in the fourth hour to their peers, who asked many probing questions. Interestingly, because the focus of the project was vocational e.g. weapon procurement or taser use, the teacher was no longer necessarily the expert in the room.

Lily then concluded the sessions by outlining some thoughts on the choice of Core maths qualification and Awarding Body, based on the subject content that is likely to be of greatest appeal to individual groups of learners.

Operational Research – York

The talk by Charlene Timewell introduced to us operational research- applying maths and using appropriate analytical methods to find solutions to complex daily problems in businesses and our lives. She showed that OR is constantly around us, from supermarket stocks, football stadium building to the running of a hospital. She has worked in schools to introduce operational research and the relevance of it. There are free OR resource at www.learnaboutor.co.uk that teachers and practitioners can use; furthermore the OR society provides free talks and academics to schools Visit the OR website for more information.

Lily Tang