

Using manipulatives to support 'mastery' in the secondary mathematics classroom

Overview of the 'work group'

Research suggests that the use of manipulatives have a positive effect on learning, particularly in terms of retention and problem solving. When students are encouraged to make sense of mathematics by using hands-on practical apparatus they are more able to transfer their knowledge to novel situations and also solve problems posed symbolically. (Carbonneau, Marley and Selig, 2013)

This 'work group' aims to enhance teachers' pedagogy and practice through investigating how manipulatives can be used to support the development of 'mastery' of a range of algebraic topics, within a secondary setting.

Participants will be encouraged to explore a range of practical equipment such as Cuisenaire Rods, counters and interlocking cubes, traditionally used in primary classrooms, alongside everyday objects, in order to support the development of students' conceptual understanding of this hard to teach area of the curriculum.

This 'work group' will take the form of an 'action research' style working group, with a requirement to complete a gap task between sessions. The group will be led by Ann Rush who is an experienced secondary school teacher with extensive experience of leading the teaching of mathematics across the full secondary age range in a number of high performing schools across the North East.

Dates of sessions

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| 9 th November, 2016 | Session 1: Introduction & 'Cuisenaire algebra' |
| 12 th January, 2017 | Session 2: Negative numbers, equations and 'zero sums' |
| 6 th March, 2017 | Session 3: Factors and expanding |
| 28 th June, 2017 | Session 4: Further ideas (e.g. Lego, Tactiles and more) & next steps |

All sessions will take place between 4:00 and 5:30pm at the **Durham Leadership Centre, Enterprise Way, Spennymoor, DL16 6YP**

To book a place, or for further information, please email your **name, school, address and contact number** to Wendy Truscott at:

wendy.truscott@durham.gov.uk

or telephone 03000 265831

Cost: £50 payable to Archimedes Maths Hub (to be refunded upon completion of the project)