



Mathematical Thinking and the new GCSE

NCP17-09

Overview

This Work Group offers teachers and their departments nationally coordinated support to address the reasoning and problem-solving challenges of the maths curriculum and its assessment in the new GCSE. Many departments will be considering not only the long-term development of these skills across KS3 and into KS4, but also the immediate needs of current KS4 pupils facing the challenges of the new GCSE. This Work Group aims to support both these aspects through professional development activities focusing on practical and accessible classroom-based approaches.

Participation also offers the opportunity to develop departmental professional development processes and produce longer-term improvement plans.

Who is this for?

All secondary schools wishing to begin or continue a programme of professional development to address the teaching and learning implications of the new curriculum and GCSE. Ideally, each school will send two members of department (*at least one of whom is experienced and has some leadership responsibility*) to maximise the impact of the professional development within the department.

This Work Group uses elements from last year's KS3 Reasoning Work Group but also extends and develops approaches to the challenges of KS4. Teachers and departments who have participated in a previous Maths Hub KS3 Reasoning Work Group and wish to continue to collaborate on embedding practice further are welcome to join and work alongside teachers in the new Work Group.

What is involved?

- 4 workshops (1pm – 5.30pm) focused on developing reasoning and problem-solving skills in all lessons
- Gap tasks between the workshops will include Lesson Study style activity, allowing wider department participation in the professional development.
- There will be an evaluation process focusing on the impact of activities on pupils and the wider department.

Intended Outcomes

- Teachers will gain deeper understanding and confidence in the planning and classroom use of approaches that develop pupil reasoning and problem-solving skills across KS3 and KS4 lessons.
- Teachers will experience collaborative professional development processes including the opportunity to lead professional development in their own departments
- Departments will have the opportunity to develop and embed practice in this area for all their teachers, including the development of a repertoire of activities, policies and longer-term improvement plans to sustain progress.

The wider context

Reasoning and problem-solving are still identified by Ofsted as areas of weakness both in teaching and schemes of learning. With the emphasis of the new curriculum on pupils becoming fluent, reasoning mathematically and solving problems, many departments will be considering how best to build these skills as pupils progress from the start of KS3.

There will also be a need to support current KS4 pupils as they face the reasoning and problem-solving challenges of the new GCSE questions.

Expectations of participants and their schools

Schools will need to commit to the release of the same nominated teacher(s) for all four workshops and to support them in the gap tasks.

This will include supporting wider staff engagement with a Lesson Study style activity between each workshop and input into 6-8 departmental meetings.

The department will also support the participating teachers to summarise the impact of Work Group participation.

Funding

There will be no charge to participating schools.

Who is leading the Work Group?

The work group will be led by Nick Bunney, one of South Yorkshire Maths Hub's Secondary Teaching for Mastery Specialists.

The workshop venue will be Hallam Teaching School, Riverdale Road, Sheffield.

If I'm interested, what next?

Please contact Nick by email to register an interest in engaging with this work group.

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The South Yorkshire Maths Hub website page dedicated to this work group can be found by following this [link here](#)