MathsHUBS
Norfolk and Suffolk

NCP4: Mathematical Reasoning in KS3

(National Collaborative Project)

Information pack for Work Group Leader Applicants

This pack has the following information:

- Overview of the NCP4 Project, set budget and Work group activity
- Overview of the role of Work Group Leader
- Expectations of Work Group teachers and Work Group Secondary Schools

Overview of NCP4 Project

Budget Set: £8000

(Actual distribution of the budget to be determined by the Work Group Leader alongside the Maths Hub Lead but primarily used for PD activities to ensure impact of project)

Programme Outline

- Work with 5 Secondary Schools (2 teachers in each school) on developing and embedding Mathematical Reasoning in KS3 classes – These schools will be recruited after October Half Term
- Pupil's mathematical reasoning becomes more fluent and more accurate, and also more confident, especially when tackling more complex mathematical problems (even if the context is unfamiliar). As a result, their conceptual understanding becomes deeper
- Departmental processes support and enrich teachers' knowledge of how to deepen and develop pupils, mathematical reasoning.
- Teachers' own mathematical reasoning becomes more fluent, accurate, and confident
- The participating maths department embed and exemplify a culture and habit of mathematical reasoning: it becomes second nature to all teachers in the department to expect, prompt and enhance pupils' mathematical reasoning, not only in lessons but also in the environment and atmosphere of the department

Work Group Activity

WG stands for Work Group
WGL stands for Work Group Leader
WGSS stands for Work Group Secondary School

- Each WG will choose the strategies for departmental development and professional learning in her/his WG, taking circumstances (e.g. experience and composition of participating departments) into account;
- Each WGL will decide how best to engage the HEI representative.
- In each WG, all the WGSS teachers will commit to following the agreed strategies, and through them develop a common approach to teaching reasoning skills (in a range of mathematical contexts) to KS3 pupils across their departments;
- In each WG, all the WGSS will use the agreed processes for professional learning (such as lesson study, TRG, team teaching, whole departmental training), but different WGLs can choose different processes.
- Each WGSS will assess the impact of the professional learning and departmental development on both the teachers and the pupils, using case studies (about teachers as well as pupils), qualitative and quantitative data (referring back to a centrally-set baseline assessment), and attitudinal questionnaires;
- Each WGL will organise the collation and analysis of the findings from the 5 WGSS on the success of the strategies of departmental development and professional learning used into a report, using a centrally provided proforma;
- Each WGL will also organise the collation of effective resources and materials developed and used;
- Each WGL and HEI will together report on the effectiveness of this aspect (HEI participation) of the project structure.
- The set of reports are collated by NCETM into one report, and made available in July 2016.

Overview of the Work Group Leader (WGL) Role

- To take on the project leadership and management role for this project on behalf of the Maths Hub Lead
- Have appropriate experience in leading Mathematical PD within and/or beyond their own school
- Have the understanding of their line manager of the time needed to fulfil the role
- To attend WGL training in November and December [2 days with a gap task] – training costs are funded by the NCETM but travel and cover costs are not covered
- Work with the Maths hub Lead in choosing and engaging with a HEI partner for the project. This person is part of the WG because the Multiplicative Reasoning & TIMEteam project found very strongly that "crucial to the effectiveness was the rigour brought by linking with research expertise (into how pupils learn mathematics and teacher professional development) from the local HEI. This was in the form of an appropriate 'university researcher'".
- Coordinate, oversee and QA (to a centrally-set standard) the activity of the 10 teachers across the 5 schools. There will be a sequence of 4 meetings and 3 gap tasks, and also regular self-review and peer coaching, from January 2016 to June 2016. These meetings will ideally last for half a day, however local needs may change this. The WGL will be expected to share outcomes and support other WGL's from other maths hubs (this could be through participating in suitably regular webinars).
- The WGL will also organise the collation of effective resources and materials developed and used.
- Each WGL will collate and analyse the findings from all of the WGSS on the success of the strategies of departmental development and professional learning used (in conjunction with the HEI partner), and will write a report using an NCETM provided proforma.
- The WGL will send reports to the strategic leadership team of the Mathshub and report back on the project at appropriate intervals.

Expectations of teachers and schools involved in the project

The details below show the expectations of any teachers involved in the WG and of the 5 schools involved in the project

WG teachers selected need to:

- Be very good, full time (or nearly) class teachers;
- Have strong and secure subject knowledge
- Be imaginative and creative "think-ers" and "do-ers";
- "know what they don't know" – and want to change that;
- Have good experience of teaching Ks3;
- Have some experience of action research/Lesson study-style CPD;
- Be prepared to challenge- indeed probably change – their hitherto successful pedagogy and practice;
- Want to focus their professional learning on improving classroom teaching, theirs and others;
- Want to work with and learn from a HEI colleague
- Have the confidence and character to propose, justify, motivate and lead significant changes of practice in their departments;
- Have the confidence and character to observe and scrutinise all their colleagues in the department, and to give meaningful and effective feedback (after, say, learning walks, lesson observations, pupil work scrutinies, or shared lesson planning time) that is constructive but also challenging

The WG secondary schools selected need to:

- Be professionally safe environments in which PD, self-reflection and pedagogic innovation are encouraged and valued;
- Have stable, co-operative, collegiate maths departments;
- Have SLT and HOD who:
    - Will give their full support to the WG teachers
    - Will meet in full the commitments set out in the project
    - Want to challenge - indeed probably change – their hitherto successful pedagogy and practice;
    - Will expect maths colleagues to engage fully and cooperatively, and monitor that they do so
- Want to engage with a local HEI to bring external prospective and rigour to their PD programme
- Be open to changing their pedagogy, practice and structure of teaching maths
- Have experience of implementing, assessing and reviewing internal change
- Have the connectivity and the relationships to lead (from Sept 2016) future clusters of schools to develop their own teaching of reasoning.