

The National Strategies' Programmes of Support for the National Challenge

National Challenge Core Plus mathematics programme

Element 1a: Leading improvements and raising standards in mathematics through senior and subject leader partnership

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Rationale

In many schools there are a number of factors that present obstacles to a senior leader or subject leader (SL) in their goal of leading improvements and raising standards in mathematics. These can result in the department feeling under pressure and unsupported and the senior team feeling frustrated with progress and helpless to influence change. These obstacles might include some or all of the following:

- poor links between subject and senior leadership resulting in brief communication often limited to monitoring outcomes with little reference to the development needs of the department
- difficulties recruiting and retaining experienced or specialist mathematics teachers and SLs resulting in a department that cannot operate as a team
- minimal opportunities for the SL, mathematics teachers and teaching assistants to work together on aspects of development such as improving planning and pedagogy. As a result, there is little consistency of practice
- restrictions on staff time to access training or networks or to make effective use of consultant support. As a result, the department has become more inward looking, is not aware of the range of support and guidance available and strategies for improvement are 'quick fix' and are not sustained.

The National Challenge offers a fresh opportunity to break through these obstacles by closely linking the actions of senior and SLs, through the Raising Attainment Plan (RAP), to the priorities required to help mathematics teachers improve the rates of progress and levels of engagement of pupils in Years 10 and 11 and to sustain that improvement.

Improvements in mathematics are an important feature of most RAPs so senior and SL should expect to work together to find urgent solutions to address the potential barriers to progress. This will require creative thinking if a shortage of mathematics teachers is one of the underlying issues. Core Plus places a high priority on staff development through collaboration, so senior and SLs should expect time to be programmed so that teams of teachers can work together on a regular basis. The RAP management team (RMT) will respond positively to creative ideas and solution-focused suggestions, particularly around staffing and timetabling.

A crucial aspect of the senior and SLs' partnership in this improvement will be to establish a climate in the department that encourages collaboration in developing fresh approaches and taking risks. In this way, practice improves and impact is secured for the long term. This is not a 'quick fix' and will require a planned approach across the key stage. However, there is always urgency to the actions required for Year 11 and so some tactical plans are outlined to establish departmental routines which support pupils as they approach the end of the course and prepare for GCSE examinations.

The approaches described in this document will assist the senior leader and the mathematics SL to work together to build sustainable improvement. As a first stage, this will involve:

- overcoming obstacles such as those described above
- considering the range of elements offered in Core Plus mathematics and tailoring those appropriate to suit the circumstances of the department
- facilitating implementation and reviewing progress as part of the agreed plan.

Quality standards

A strategic approach will involve a senior leader working with the mathematics SL, with appropriate support from a local authority (LA) consultant. Key elements will include close partnership working to:

- find creative solutions to overcome challenges, remove barriers, set high expectations for departmental improvement and raise standards for pupils
- facilitate implementation of the RAP in mathematics and review progress
- establish a climate for learning in the department so that teachers and teaching assistants feel supported to 'take risks' in the classroom in order to improve teaching and learning
- focus on the professional development needs of teachers required to ensure the impact of the selected Core Plus elements.
- drive sustainable improvement through collaboration focused on planning and pedagogy.

Exemplification

The support and guidance which is available should encourage senior and SLs to raise their expectations and re-think the way they work together to establish new systems, get the whole school community involved, get started and get evidence of impact.

Existing departmental developments, such as launching the new curriculum at Key Stage 3, will provide a good foundation for the focus of Core Plus. Improvement in teaching and learning can be built on and transferred to Key Stage 4 so that teachers do not feel overwhelmed by change but see ways of capturing the momentum of an exciting new curriculum using approaches they see having an impact on learning. For two examples of building on current development work, see the case studies on pp. 5–6.

Getting systems and routines focused

Senior and SLs' joint analysis of performance in mathematics by group is a very effective way of focusing development work on the needs of pupils. Often analysis will confirm teachers' 'gut feeling' about who is underperforming but occasionally unexpected attainment gaps emerge between groups specified by gender, ethnicity and free school meals (FSM). For example, at national level many Black and minority ethnic groups underperform more in mathematics than in other subjects. For a two-page summary of where to find support for this issue see Help sheet 1, *HS1: Narrowing attainment gaps for Black and minority ethnic pupils*.

Think creatively about the allocation of mathematics staff to teaching groups so that the best teachers in the department influence the learning experience of as many pupils as possible and are used to support other teachers in the department. There may be excellent teachers and teaching assistants working in other subjects whose expertise is transferable. It is not always essential for these teachers to know the subject but they can have a big influence in supporting mathematics teachers as they take on new

teaching and learning approaches. For example, they could support mathematics teachers to establish pupil roles in group work, to sharpen lesson structure, to open up pupil dialogue and teacher questioning, to improving classroom organisation, especially where equipment is involved and to increase the pace of learning.

Getting everyone on board

The momentum of improvement will be greater when pupils are explicitly engaged in the process of change and are seen to have an influence. So, give a high profile to focus groups of pupils so that everyone can see that pupil views influence what is happening. Make sure that a range of pupils are invited to become involved; for example, a balance of gender, FSM entitlement and ethnic groups. Think about some key personalities among the pupils who could hold sway in particular underperforming groups and use these as 'pupil leaders of change'. Feed this involvement through at lesson level by individual teachers or representative pupils talking to their classes and by the senior and/or SL talking to larger groups of pupils. For example:

'You have told us what will help you learn more effectively and so...'

'We are making changes to grouping arrangements because...'

'Our commitment is..., your commitment is...'

'The way you can let us know your views and ideas is...'

'We will all find some aspects of these changes hard, we must be prepared to persist so...'

'We need you to update us on the impact of changes, so...'

Identify members of the local community who use mathematics and who could become academic mentors. Expect to make full use of the school as an extended community learning base and involve parents/carers at all stages. Act on cultural or linguistic barriers if these represent a barrier between home and school communications. Help parents/carers to see that they do not need subject expertise to act as coach, questioner, supporter or listener. Invite parent/pupil pairs to high profile events such as 'super learning days' and to regular features such as surgeries and workshops, especially as the examination period gets closer. Consider running parent/carer workshops, for example to offer ways of:

- giving encouragement when work at home is challenging
- asking questions so that children explain their thinking
- taking part in active revision activities.

Keep parents 'in the loop' by communicating regularly about expectations, progress and crucial dates. Information and feedback should focus on successes as much as possible. Be creative and talk to parents and pupils about better ways of keeping them up to date. Expect to use some or all of the following:

- messages, automated phone calls
- the school website
- dedicated joint parent/pupil 'Outlook' accounts, sending joint email messages, including helpful attachments for activities and feedback, setting up reminders and placing entries on calendars
- individual letters, group letters from teachers, subject and senior leaders
- pupils sending a 'postcard pledge' home at strategic points in the term
- verbal and written reminders at parents' meetings
- newsletters.

Getting started

The first practical task is for the senior and SL to discuss this paper with selected colleagues such as the supporting consultant and a key teacher in the department. It will be helpful if all involved could first read the Core Plus mathematics User guide and

the Core Plus elements listed below. The elements are described in overview in the User guide:

1. a) Leading improvements and raising standards in mathematics through senior and SL partnership (this paper)
b) Element 1b: Leading improvement and raising standards in the mathematics department: Pivotal pupils in Year 11
2. Planning for progression in mathematics: Raising expectations by developing sequences of learning in Years 10 and 11
3. Improving mathematics subject pedagogy and the climate for learning
4. Tracking Pupils' Progress using APP and the underpinning principles of Assessment for Learning (AfL)
5. Intervention and personalisation in mathematics
6. Securing consistent pupil performance across core subjects (addressing factors influencing in-school variation): Developing Personal Learning and Thinking Skills (PLTS) in mathematics.

Choosing and aligning the elements is described in the User guide and will be the main outcome of an initial strategic meeting. Overall, it is better to start some elements of improvement and maintain an ongoing review of the focus rather than to spend a long time finding out what should be done. Often a group of teachers working together to improve teaching will gradually realise the nature of further improvements which are needed. So the message is – get started on some collaborative work in the department and make sure that the developments involve target pupils.

Getting evidence

The role of the senior and SL is to agree how each will maintain a keen eye on the impact of the work and to make sure that this is used to re-focus developments and remove potential barriers to improvement. This review will build the confidence of the mathematics department in developing and refining fresh approaches to teaching and learning if it is precisely focused on the agreed aspects under development and if it leads into constructive next steps.

To support the review at the end of a six-weekly implementation period, each element includes a set of prompts 'Review against quality standards'. These describe ongoing evidence of progress towards achieving the quality standards and are intended to provide the senior and SL with a shared agenda to be use flexibly when making judgements. It is unlikely that evidence will emerge against all prompts at the end of every six-week block. However, over time, a comprehensive range of evidence can be gathered. The 'six week' structure is designed to match the RAP reporting cycle. Department evidence is best staged so that it is agreed in advance of the main RAP evaluation meeting. In the early cycles, evidence is likely to be strong on changes in teaching, the climate for learning and the impact that this has on pupils' and teachers enthusiasm for further improvements in mathematics learning.

Judgements will be made by all teachers through self-reflection, from selected observations in the classroom and through discussions with small groups of pupils. Two templates are provided as part of *Secondary mathematics planning toolkit* (DCSF ref: 00342-2008CDO-EN) to support this:

Teaching and learning review template: unit/lesson

Teaching and learning review template: pupils' views.

These are in spreadsheet form, designed to be adapted to match the chosen priorities and the review prompts. They provide a mechanism to capture the notes of teachers as they reflect on their own or a colleague's lessons, of senior and SL as they observe

lessons and talk to focus groups of pupils. The sheet includes suggested questions through which to prompt pupil discussion.

Whole-school tracking systems will be used to gather evidence of pupils' progress towards curricular targets. Meaningful tracking is built on secure understanding of the grade criteria and does not rely solely on tests. It will be helpful to weave improved ongoing assessment strategies into each of the teaching and learning developments. Resources and strategies to support better AfL are the focus of Element 4 and these could be used to 'kick start' thinking and to generate ideas which could inform the plan-teach-review cycles of other selected elements.

Review

Review against quality standards.

After six weeks of implementation make a judgement about the extent to which:	Specify exactly who will make the judgement – choose from: – senior leadership team (SLT), SL, key teacher, advanced skills teacher, consultant.	Specify how this will inform the RAP, and the next steps.
Senior and SLs are working together with clear roles to support the chosen Core Plus elements and are evaluating impact to feed in to the RAP evaluation.		
Senior and SLs have established a climate for learning in the department and are aware of teachers' development needs essential to secure the impact of Core Plus.		
Mathematics teachers are working collaboratively on the selected Core Plus elements.		
Improved practice is becoming established as part of departmental systems and routines and improved planning is being captured in the schemes of work.		

Case studies

Case study A – launching the new curriculum and working on Core Plus

In this scenario, the SL has started working with the department to launch the new programme of study in Year 7. He is worried about how to balance this alongside Core Plus actions in Key Stage 4. He arranges to discuss this with the senior leader, sharing with her the teaching and learning review templates showing the selected prompts for the focuses of the Year 7 work, in this case:

- key processes in algebra, especially aspects of representing
- pupils working collaboratively and engaging in mathematical talk

- teachers exposing and discussing common misconceptions.

Through discussion, they realise that the teaching and learning at Key Stage 4 would benefit from the same focus. The SL can see that rich tasks developed for Year 7 could easily be adjusted to get the pitch right for Year 10 and that classroom organisation and planning can also be adapted. He knows that teachers will feel better able to try some new strategies on Year 10 after they have practised them in Year 7.

Case study B – capitalising on Functional Skills developments

In this scenario, a new SL has become involved in an LA network group developing sequences of lessons with a focus on functionality. They have used a number of ideas from the *Teaching and learning functional mathematics* folder (see Resources, below) and two trial groups of pupils are showing more motivation for their mathematics learning.

She discusses the impact of this work with the senior leader and they decide to extend this good practice across the department by taking a functional focus to the units they will plan as part of Core Plus Element 2 *Planning for progression in mathematics: Raising expectations by developing sequences of learning in Years 10 and 11*. The senior leader arranges for enthusiastic teachers from ICT and English to work alongside the mathematics SL so that they can start thinking about some units with a joint focus on functionality.

Resources

Help sheet available as an optional download from the element 1a web page.
HS1 Narrowing attainment gaps for Black and minority ethnic pupils

Secondary mathematics planning toolkit (DCSF ref: 00342-2008CDO-EN)

Adaptable templates folder:

Teaching and learning review template: unit/lesson

Teaching and learning review template: pupils' views

Rich tasks folder:

Teaching and learning functional mathematics

A copy of this CD-ROM could be obtained from the LA mathematics consultant or ordered from DCSF Publications T: 0845 60222 60, email: dcsf@prolog.uk.com

An extensive set of SL development materials are detailed in the mathematics 'Subject leadership' area:

www.nationalstrategies.standards.dcsf.gov.uk/secondary/mathematics