

The National Strategies' Programmes of Support for the National Challenge

National Challenge Core Plus mathematics programme

Element 5: Intervention and personalisation in
mathematics

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Rationale

Secondary schools are becoming increasingly successful in improving rates of progress for underachieving pupils, yet schools' self-evaluation frequently identifies missed opportunities for identifying and addressing pupils' skills needs and barriers to their learning. Intervention is action planned to improve the progress of pupils who are identified as underachieving and at risk of not fulfilling their potential. Intervention supports personalisation when it recognises that pupils encounter barriers to their learning and helps them overcome these barriers. It is designed to ensure that all pupils make good progress in literacy and mathematics and can access the Key Stage 3 and Key Stage 4 curriculum.

Some mathematics departments put together extensive short-term, booster-style intervention programmes as the final examination looms close but this can be too late for some pupils and the urgency and pressure can prove stressful for pupils and teachers. However, other departments achieve improved rates of progress by putting into place systems which pick up and address early signs of underperformance. This relies upon monitoring and tracking pupils' progress over time, gathering, sharing and using information about pupils' progress to rapidly and accurately identify underperformance and barriers to pupils learning of mathematics. Teaching, intervention and revision programmes can then be informed by this regular monitoring and adjusted in the light of pupils' needs. For more detail of tracking to support intervention see Core Plus Element 4, which focuses on both tracking and Assessment for Learning (AfL).

Effective intervention provision and teaching is more than the application of additional time-limited programmes. Schools that are successful design a continuous, tailored approach linking high-quality first teaching with time-limited additional programmes for pupils who are underperforming, stuck or falling behind across both Key Stages 3 and 4. They also provide individual tuition for pupils with particularly intransigent barriers to learning or who have much ground to make up. (This is often described as Wave 1, 2 and 3 provision.) Well designed and targeted intervention is integral to school improvement planning.

This element exemplifies the Secondary National Strategy approach and the supporting materials and guidance available on the intervention website: www.standards.dcsf.gov.uk/intervention

Quality standards

Effective intervention is a whole-school approach, with identified roles and responsibilities, which ensures that:

- the barriers to learning of all pupils in Years 7 to 11 who are working below expectations and have the potential to achieve more are identified and appropriately provided for, and their progress is tracked
- identified pupils make good progress in the key areas of literacy and mathematics, close learning gaps and meet or exceed expectations; that is, there is a significant increase in the percentage of pupils making two levels of progress, particularly those moving from level 3 to level 5 in English and mathematics at Key Stage 3, and in those moving from level 5 and level 6 to English and mathematics GCSE grade C and above at Key Stage 4
- well focused and targeted additional support for pupils is linked to their main learning and teachers direct the work of additional adults to support the identified needs of learners. These adults address pupils' particular weaknesses and equip them to work more effectively in lessons
- pupils know their own learning needs and what to do in order to improve. Where available, necessary and appropriate, pupils with particularly intransigent barriers to learning or who have much ground to make up receive personal tuition.

Exemplification

Successful implementation of intervention will require a strategic lead at a senior level and a dedicated group of middle leaders and key adults to coordinate provision and run the programme across subjects. Sustainable and effective school intervention will have a high profile in the Raising Attainment Plan (RAP).

As part of the RAP evaluation, and to maintain the momentum of improvement, the actions taken by the whole school and the contribution of the mathematics department will be evaluated at six-weekly intervals. The summary below outlines minimum expectations of actions to establish an intervention system in the first term. It prioritises Years 10 and 11 and assumes the school is 'starting from scratch'. Since this is unlikely, it will be possible to accelerate this process. In particular, mathematics subject leaders (SLs) who are working as part of an established system should move to p. 4 'Further guidance on using mathematics teaching as part of a systematic approach to intervention' and consider strengthening their subject contribution to the whole-school system.

In the **first six weeks**:

- identify target groups of pupils in Year 10 and Year 11 and their curricular targets
- put into place Wave 1 intervention actions (as detailed in autumn term actions of Element 1b 'Leading improvement and raising standards in the mathematics department: Pivotal pupils in Year 11' and Element 2 'Planning for progression in mathematics')
- design and agree Wave 2 and 3 systems
- identify professional development needs of staff and start this development
- establish regular progress review for progress of pupils involved in Wave 1.

In the **second six weeks**:

- identify target pupils for Wave 2 and Wave 3 intervention (give priority to Year 11 pupils)
- identify the curricular targets and barriers to learning for these pupils
- begin Wave 2 and Wave 3 intervention actions (use guidance on the intervention web site)
- establish regular progress review for progress of pupils involved in Waves 2 and 3.

Thereafter the intervention system should be extended to other year groups and will include:

- analysis of all data and pupil tracking, including attendance and behaviour
- identification of, and ongoing support for, the professional development needs of those teachers and other adults involved in the intervention support
- identification of barriers to learning experienced by individuals, small groups or even whole classes and the selection of appropriate curriculum targets to address the barriers, providing a personalisation to the intervention
- communication between all supporting staff so that they know the specific curricular targets that pupils are working towards and are having extra support with
- monitoring the level, nature, coherence and impact of support received by individual pupils
- coordinating the English and mathematics departments' overall approach and keeping subject colleagues updated and informed.

Review

Review against quality standards.

After six weeks of implementation make a judgement about how far, and in what ways:	Specify exactly who will make the judgement – choose from: senior leadership team (SLT), SL, key teacher, advanced skills teacher (AST), consultant	Specify how this will inform the RAP and next steps
Targeted additional support for pupils (Waves 2 and 3) is linked to their main learning (Wave 1) and teachers direct the work of additional adults in the classroom to support the identified needs of these pupils.		
All pupils in Years 7 to 11 who are working below expectations and have the potential to achieve more have been identified and are being appropriately provided for, and their progress is systematically being tracked.		

The departmental process of pairing together for collaborative work and any professional development opportunities provided have impacted on teachers' practice.		
The department has capacity to sustain renewed or revised approaches to intervention in mathematics and has clear plans for further development of high-quality, linked Wave 1, 2 and 3 tailored provision.		
Any mathematics teachers are in need of further support to provide tailored support for pupils who need it in mathematics.		
The school has capacity and expertise needed to provide personal tuition for pupils with particularly intransigent barriers to learning or who have much ground to make up.		

Further guidance on using mathematics teaching as part of a systematic approach to intervention

An effective intervention programme can be supported by mathematics teachers and teaching assistants when they understand the three waves of tailored support (see figure 1: Intervention – the big picture, on p. 7).

Wave 1 is everyday planning and teaching in regular mathematics lessons. It involves high-quality, inclusive mathematics teaching supported by effective whole-school policies and frameworks, clearly targeted on all pupils' needs and prior learning.

Wave 1 guidance and support is described in Core Plus Elements 2, 3 and 4, which focus on planning for progression, improving pedagogy and developing strategies to support tracking and AfL, respectively.

Wave 2 involves time-limited, tailored intervention support programmes which are designed to increase rates of progress and secure learning for groups of pupils. Wave 2 support will take the form of tight, structured programmes of small group support, carefully targeted and delivered by teachers or suitably trained teaching assistants. In summary it will include:

- support for identified groups of pupils provided by teachers, teaching assistants (TAs) or other adults
- support sessions focused on identified weaknesses in specific aspects of the curriculum
- support provided in lessons through guided group work or in sessions additional to the regular mathematics lessons.

Wave 2 guidance and support is available through the *Progression maps*, which are an online interactive resource to help teachers to pinpoint where pupils are struggling, and target teaching and support to meet those needs. Teachers can identify the point where a pupil or a group of pupils is situated on the map and, from there, access a range of material designed to help them focus their teaching on the critical next learning steps for these pupils. Examples of Wave 2 teaching can be as simple as re-grouping pupils in the lesson so that the teacher or TA can work closely with them on a particular task. Some schools place 'target pupils' in the same tutor group so that additional small group support can happen on a regular basis as part of tutor time. Study Plus is perhaps the most intensive example of Wave 2 intervention (see the case study on p. 6).

Using the *Progression Maps* to target, and hence personalise, the needs of a small group will involve:

- identifying exactly what the pupils need to work on to improve. This will be expressed in a way that pupils and supporting adults can understand and be as precise as possible. The *Progression maps* will help to identify the target; there is a map for each sub-strand, identifying ten steps or predictable 'problem points' in the journey from level 3 to grade C. The upper few steps can help teachers to pinpoint and address specific 'grade C obstacles'
- linking from the progression step to '*Examples of what pupils should know and be able to do*' will help pitch the teaching and also provide a way of gauging when the pupils are showing success against the target
- linking from the progression step to '*What to do if pupils find this a barrier?*' will give ideas of how the understanding may be built up. This often includes teaching ideas and materials to help address that particular step
- linking from the progression step to '*Probing questions*' will provide the supporting adult with ways to initiate dialogue and decide whether pupils have a secure understanding of a particular objective.

Another example of Wave 2 support would be the provision of revision surgeries or workshops on the approach to an examination. The important feature here is that the sessions are specifically focused on a curricular target and that some pupils are guided towards particular workshops.

Wave 3 involves an increasingly individualised approach through one-to-one or very small group support via a specialist teacher, highly trained TA or academic mentor. Like Wave 2, it is time limited, highly focused and intended to get pupils 'back on track'. It may involve support for elements of mathematics but is also likely to address other barriers to learning such as study skills or emotional vulnerability.

Wave 3 guidance and support is available through *The learning conversation*, which can be a powerful intervention strategy for targeted learners because it addresses self-limiting beliefs about their own capacity to make progress. Online guidance is available to support the adult coach to explore the features of this distinctive type of interaction with a small group of learners.

Another example of Wave 3 support would be *The Key Stage 4 Learning Challenge*, which helps to support pupils who are having difficulty preparing for GCSE examinations at the end of Year 11. The main aim is to help pupils develop their confidence in sitting examinations. It is linked to subject-specific booster material.

Case study

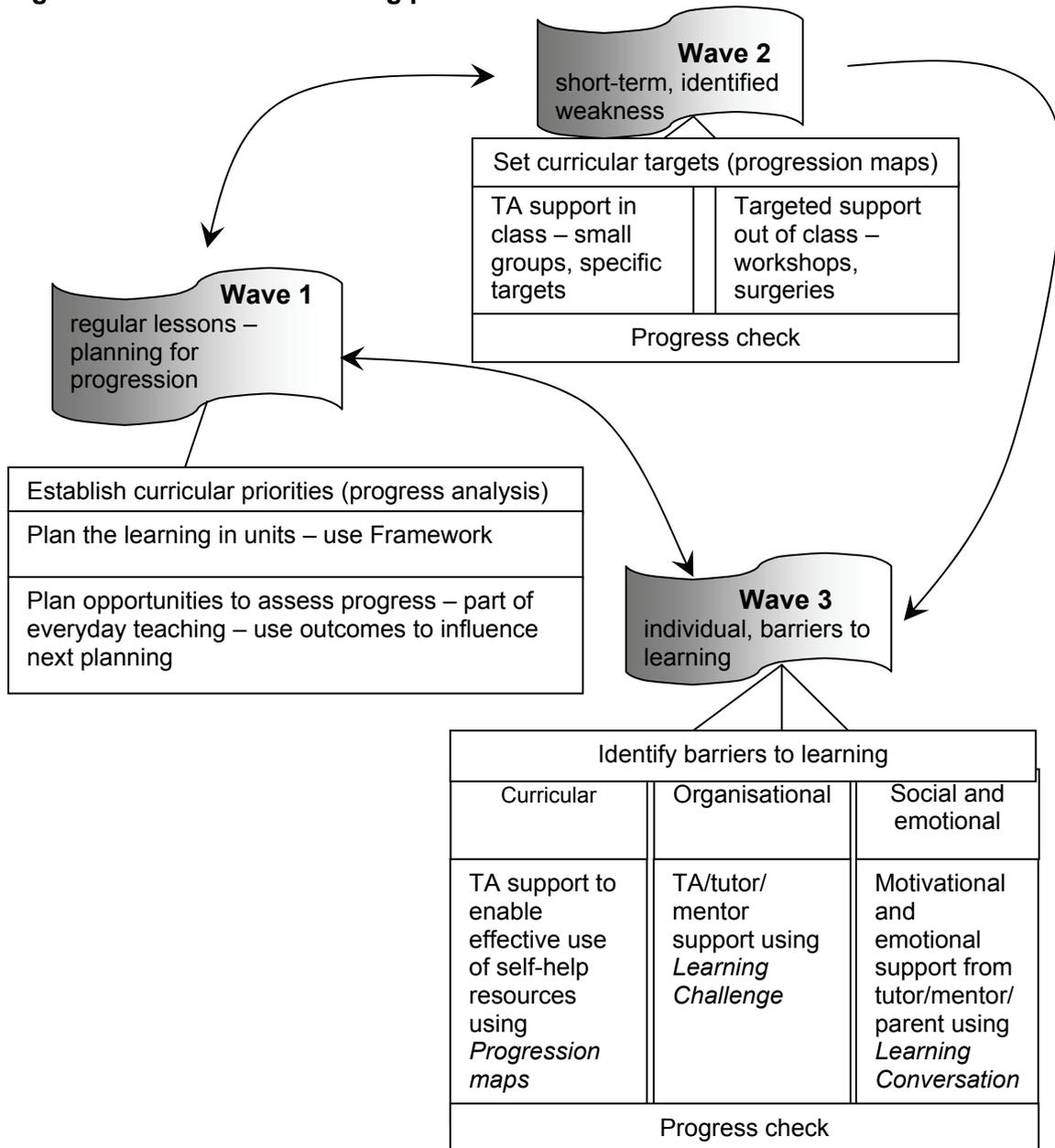
Study Plus

Key Stage 4 Study Plus is a Wave 2 intervention programme that aims to help selected pupils attain five GCSEs including English and mathematics at grade C or above. Although it replaces an option on the timetable, it does not carry accreditation – the aim being to alleviate academic pressure on these pupils and to ‘free them up’ to think and learn more flexibly. By strengthening crucial skills in English and/or mathematics, Study Plus aims to help pupils learn better in all their GCSE subject lessons.

In this approach, teachers plan sequences of units designed to allow pupils to build skills and apply them in a worthwhile and interesting context. Each unit is structured around a cluster of targets that have been identified as crucial for the pupils’ learning. In some pilot schools, the Study Plus TA supports Study Plus pupils in GCSE lessons to help secure the transfer of learning. In other schools, the planning of Study Plus units has taken account of topics in different GCSE courses to create active links between their Study Plus learning and GCSE work. The *Key Stage 4 Study Plus Handbook* offers advice, support and resources around this approach.

The following diagram illustrates the ‘Wave model’ and gives some examples of actions and structures that might be used to personalise intervention in order to address pupils’ learning needs.

Figure 1: Intervention – the big picture



Resources

Improving attendance and reducing persistent absence

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

- *Key Stage 4 Study Plus Handbook* (DCSF ref: 00327-2007BKT-EN)
www.nationalstrategies.standards.dcsf.gov.uk/secondary/mathematics/intervention
A copy of this publication can be ordered as part of the pack DCSF ref: 00327-2007PCK-EN from DCSF Publications T: 0845 60 222 60, email: dcsf@prolog.uk.com
- Progression maps
www.nationalstrategies.standards.dcsf.gov.uk/secondary/mathematics/intervention

The following additional resources can be found under 'Core Plus' in the mathematics 'Subject leadership' area at:

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

- The *GCSE booster packs* (DCSF ref: 0696 2003) and *Key Stage 4 Learning Challenge* (DCSF ref: 0088-2004 G) offer guidance for teachers and school leaders on organising a revision programme exam preparation
- *The Key Stage 4 Learning Challenge* (DCSF ref: 0088-2004 G)
- *Tracking for success in mathematics* (DCSF ref: 00007- 2007BKT-EN)

Continuing Professional Development (CPD)

The Intervention area of the website

(www.nationalstrategies.standards.dcsf.gov.uk/secondary/mathematics/intervention) offers a series of training modules to introduce teachers and teaching assistants to the support for planning and delivery of intervention strategies at Key Stage 3 and Key Stage 4 in English and mathematics. The 'road to effective intervention' is informed by the modules and comprises of six steps:

- identify target pupils
- identify pupils' learning needs
- set curricular targets and allocate pupils to programmes
- tailor teaching – teachers and teaching assistants tailor their support
- involve other adults in support (supporting the class teacher, working with groups, working one-to-one, working with Study Plus, key aspects of mathematics intervention)
- evaluate impact on pupil progress and review next steps

The following additional resources can be found under 'Core Plus' in the mathematics 'Subject leadership' area at:

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

- ***The learning conversation*** is a professional development programme that explores a distinctive type of interaction between a small group of learners and an adult coach.