Raising standards in primary mathematics:
Bordesley Green Primary School

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Brief description

This example shows how Bordesley Green Primary School has raised standards in mathematics through a consistent, single-minded commitment to high-quality teaching with close monitoring to help every teacher develop and ensure that high quality is in every classroom. When pupils’ learning is held up by misconceptions, whether in the Foundation Stage or in Year 6, the highest priority is to make sure that these are resolved.

Overview – the school’s message

‘We have a single-minded commitment to raising standards and all our processes and practices are directed towards this aim. We have a monitoring system that digs deeply into every aspect of classroom practice and pupil progress. We monitor the mathematical development of every pupil, with particular regard to their misconceptions and their ability to use and apply mathematics. We intervene with individuals and groups of pupils using senior leaders, teachers and teaching assistants. We then track the success of the interventions over time to make sure that they have been successful. We monitor pupils’ numeracy skills, especially mental methods, closely. And we listen to our pupils and record their understanding in assessment folders.

All of this is only possible because pupil achievement is at the heart of our energies day in and day out. We have taken national and local initiatives, adapted them and made them our own. We have expanded successful initiatives even when funding sources have dried up. As a staff we all understand that the ethos of constantly raising standards is non-negotiable. Nothing less than the best for our children will do.’

Carole Harris, Headteacher

The good practice in detail

Bordesley Green Primary School has been highly successful in raising standards in mathematics. In 2009, 66% of Year 6 pupils gained Level 4 or more in mathematics. By 2012 that figure was 83%. For Level 5 or higher, the proportion more than doubled from
15% to 33%. Yet the school is in an inner-city area with high levels of deprivation. About 30% of pupils have special educational needs. In an Ofsted mathematics subject visit in June 2012, the overall effectiveness of mathematics was judged to be good, with the leadership and management of the subject outstanding.

This improvement has been driven by:

- rigorous monitoring
- moderation of pupils’ work across the school
- observing and listening to pupils and so developing a deep understanding of how they are thinking and their misconceptions.
- detailed records of progress, including how pupils use and apply mathematics
- well-planned interventions when misconceptions arise, led and often delivered at senior level, with monitoring over time to check pupils’ continuing success
- a consistent approach to developing skills in number
- a clear commitment by the whole school community to raise pupils’ attainment.

So what strategies can be used to raise standards significantly in a short period of time? Is success in national tests dependent on teaching to the test, teaching short cuts and ‘cramming’ until pupils no longer enjoy the subject? What makes the leadership of a subject like mathematics outstanding in a primary school?

**Rigorous monitoring**

A thorough termly cycle of monitoring involves work scrutiny, lesson observation, planning scrutiny and pupil voice. Every teacher receives detailed feedback in each subject area. This typically takes 30 minutes, but if needs arise could well be over an extended period to explore the type of support required. Colours are used to indicate the date of the monitoring, so improvement over time is evident.

Lesson observations are carried out jointly, by the performance management reviewer accompanied by either the subject coordinator or a member of the senior leadership team. This assists in the moderation of judgements and in the continuing dialogue about high-quality teaching and learning. All middle and senior leaders have had high-quality training from Birmingham Local Authority on performance management, including managing difficult discussions.

Through this monitoring, the priorities of the school become clear. When senior leaders need to drive the quality of teaching in a particular way, this is not a matter of mere exhortation. Each member of staff will have an appropriate target in their performance management objectives, and these will be checked carefully each term.

Debbie Thomas, the mathematics leader adds: ‘I find it fantastic to go in to a lesson as a subject leader and see the exciting approaches that teachers are developing, and even more to explore the ways children are learning.’
Moderation of pupils’ work

Each term a formal moderation exercise is carried out across the school in mathematics, which continues informally in teachers’ preparation and assessment time. In these exercises, teachers compare the work of pupils at a particular level with other pupils in different year groups. Some pupils are working at Level 2b in Year 6 for example, and many comparable pupils will be in Year 2. As well as checking that all teachers share an understanding of these levels, the exercise enables a comparison of the strategies for moving pupils on. For instance, the Year 6 teacher may have a lot to learn from the Year 2 teacher about appropriate prompts. Traditionally, planning has been dominated by expectations of what that year group should achieve. For pupils who are ahead of or behind their peers, it is very instructive for teachers to see the methods used successfully in other year groups. In these meetings, teachers pay particular attention to the way they each assess work, and the kind of comments that will help pupils to progress.

Evidence of pupils’ progress

In the Early Years Foundation Stage, teachers use notes and photographs to capture pupils’ progress. This evidence is kept in a folder which follows the pupil throughout the school. It contains a wide range of information, such as:

- assessment of prior knowledge before a unit of work
- assessment following a piece of work, which could be through a practical activity or a piece of structured play. This could be some time later to check on how much learning has been retained over time
- recording the results of small-scale investigations. Teachers are encouraged on these occasions to listen and record. All too often teachers risk intervening and doing the investigation for the children! This example shows a record of an investigation into possible nets for a cube
- recording photographs of key moments. This example shows a pupil who had misunderstood an ‘=’ sign as meaning ‘makes’ rather than ‘is equal to’. It shows him working on an exercise practising the meaning of ‘is equal to’
- recording quotes that demonstrate emerging understanding. For example, a quote from a pupil with special educational needs in Year 6 who had been photographing rectangles in the
school environment and realised that the shape made by the strands of a chain-link fence were in fact squares.

Pupils’ folders provide a better insight into their development than can be gained from a set of marks. They are, of course, in addition to grades that are recorded over time.

**Interventions**

‘Intervention must be closely linked to children’s day-to-day classroom experience. When a pupil shows that he or she has gained a skill, it may be necessary to challenge the class teacher’s preconception and persuade them that a new skill has been learned. Equally it’s important that the class teacher is fully using any specialist apparatus that may have supported that child, so that the pupil is not thrown back into an environment devoid of support, or even worse just handed a work sheet!’

*Lorna Burgess, assistant headteacher.*

At Bordesley Green, a variety of approaches have been taken to intervention. The scheme *Numbers Count* and apparatus such as *Numicon* have been very influential. However, the school has adapted these to their needs. Numicon is used as a normal piece of classroom apparatus by all year groups and all abilities, including more able children and in investigations. The insights from Numbers Count have been added to other intervention work so that all age groups in the school are targeted, as are all abilities.

Key features that have led to successful intervention are:

- the close link between intervention and the day-to-day classroom. For this, the training of all teachers in the use of apparatus such as ‘Numicon’ has been crucial. It is important that when interventions have finished, pupils are not placed back in an environment where such apparatus is foreign. Many other practical forms of apparatus are used also, but the link between intervention and the classroom is key. It is standard practice also for those staff teaching an intervention group or pupil to liaise closely with the class teacher

- training for staff to teach individuals or groups needing extra support. Interventions may therefore be undertaken by an assistant headteacher, or the mathematics leader, or a teacher or a teaching assistant. They may take place with a group during the normal mathematics lesson, or as a withdrawal group. Although the funding for ‘Numbers Count’ has ended, the school has used its own funds to ensure that this support continues and indeed that its impact continues to spread across the school. The school employs a teacher on a 0.5 contract to work with small groups or individuals in mathematics. There is also a full-time teaching assistant allocated to this work.

- adjusting the contracts of the teaching assistants. Each teaching assistant leads a 30-minute intervention group at lunchtime at some stage during the week. In this way substantial intervention work is possible without pupils missing core teaching.

- once a pupil has had a programme of intervention to deal with a specific difficulty or misconception, they are monitored as a ‘group’, just as, for example, free school meals
pupils would be. In this way, their continuing progress over time is measured to check that the intervention has been successful, or whether it needs to be reinforced.

**Developing numeracy skills**

‘A coherent calculation strategy is so important’, says Carole Harris. ‘But this doesn’t just mean that all staff are teaching consistently, it also means that parents, carers and any external tutors that pupils access are also fully aware of how we work. We would never stop a child who has an efficient method, but often we find that if a child has been taught a formal written method at a very early age, it may be at the expense of their grasp of mental methods. Also, parents and carers may not be aware of the wider areas that pupils need to know, whether it be number bonds or square numbers’. So the school puts significant effort into keeping its links with parents and carers fresh, so that they know how their children are being taught and can support their learning. Every classroom displays the school’s calculation strategy, which is also sent home.

‘Numeracy Passports’ are used to identify gaps in pupils’ mental skills. As with other resources, they have been adapted for the school’s purpose. In particular, resources for parents exemplify strategies relevant to each pupil’s current targets.

**The school’s background**

*Bordesley Green Primary School* is a large inner-city school in Birmingham. It is in an area of high deprivation and over 90% of pupils do not have English as their first language. About 30% of pupils have special educational needs. The school seeks to be at the heart of the local community.

Are you thinking of putting these ideas into practice; or already doing something similar that could help other providers; or just interested? We’d welcome your views and ideas. Get in touch here.

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