



Welcome to another NCETM Primary Magazine. In this edition, we feature a school in a very rural part of Northumberland engaging in the new Maths Hubs Mastery Readiness Programme, as well as teachers from a school in the South West who have shared their experience of piloting our Primary Mastery Professional Development Materials. And we ask what the implications are, for primary teachers, of knowing what pupils are finding hard in their GCSE exams.

Don't forget all previous issues are available in the [Archive](#).

This issue's featured articles



[Why Mastery Readiness isn't just 'mastery-lite'!](#)

The Mastery Readiness Programme offers support to schools to put in place structures, systems and positive mathematical culture, to enable them to successfully engage in teaching for mastery. We visit a tiny school on the North East coast to find out what's changing for them.



[Using the NCETM's mastery materials for the first time](#)

The NCETM-Maths Hubs Primary Mastery Professional Development materials are now published for the whole of Spine 1: Number, Addition and Subtraction, for all year groups Y1-Y6. Steeped, as they are, in the teaching for mastery work of NCETM and the Maths Hubs, how suitable are these materials for schools that have not yet picked up the teaching for mastery baton? We hear from teachers in Bath, talking about their experience in trialling them.

Work out $\frac{1}{2} \times 5$

Circle your answer.

[From our Secondary Magazine: An Audience with the GCSE Exam Boards](#)

Often primary teachers are surprised by the familiar difficulties that pupils are still encountering when they sit their GCSE exams. For example, one question (multiplying a half by five) was answered correctly by only 39% of students at Foundation level last summer. We talked to the three main exam boards about how Year 11s performed, for our Secondary Magazine. You might find it interesting reading.

And here are some other things for your attention:

- A chance to understand what we can learn from Shanghai maths teachers: the England-China Exchange takes place again early next year, 14-25 January, with a school in every Maths Hub area opening its doors to hundreds of local teachers who want to see teaching for mastery in action. Contact your [local Maths Hub](#).
- Series Three of *Numberblocks* is now on CBeebies. We have published an [overview document](#) to help teachers track the maths covered.
- What is it like to be in a Maths Hub Work Group? Find out from our latest [podcast](#).
- Are you a Specialist Leader of Education (SLE) looking to fine-tune your school improvement work? There's a [new, funded programme](#) available through Maths Hubs, designed to strengthen the impact of maths leaders - apply by **23 November**.
- Times tables tests for Y4s proposed to begin in 2019/20 (subject to parliamentary approval). Details of how the checks will be administered and how the data used are in [this document](#) from the Standards and Testing Agency.
- The Association of Teachers of Mathematics (ATM) and The Mathematical Association (MA) are holding a [joint annual conference](#) in 2019, running from 15-18 April, and places can be booked now.

A number of bursaries are being offered: both the [ATM](#) and [MA](#) websites have details and closing dates for applications.



Why Mastery Readiness isn't just 'mastery-lite'!

A warm smell of baking greets us as we are welcomed into Lowick CE First School, ten miles south of Berwick-upon-Tweed and slightly inland from the stunning coast that overlooks Holy Island (Lindisfarne). The buildings and grounds are spacious and bright – the school has two mixed-age classes (Reception/Y1 and Y2/3) and a nursery.

Lowick and Holy Island CE First Schools are engaged in the Maths Hubs Mastery Readiness Project, with the Great North Maths Hub. This new, year-long preparation programme is designed for schools who are interested in teaching for mastery but, for a variety of reasons, face barriers that make it difficult for them to engage in the full Teaching for Mastery Programme. We visited Lowick on a sunny autumn day, along with the local Mastery Readiness Lead, Laura Tullock, to get a picture of the bespoke support work she is doing with the school.

The Schools' Federation

Lowick CE First School faces all the challenges of a very rural location: mixed-age classes, difficulty recruiting staff, relative isolation from the support available to schools in more populated areas, as well as a peculiarly different challenge of a timetable governed by the tide.



Map data ©2018 Google

Since September 2018, Lowick School has been joined in federation with Holy Island CE First School, a school on Holy Island that at present has only two pupils! In practice this means that the Holy Island pupils are educated at Lowick when the tide allows, but when the tide covers the causeway, they are taught in the small Holy Island school by Heather Stiansen, the Lowick Y2/3 teacher who also lives on the island. This gives headteacher, Rebecca Simpson, a significant teaching load, as she teaches the Y2/3 class on the mainland when Heather is on the island.

Mainland children also often use the island site for events such as sports day, Forest School and Viking raids! (You can see a short [Viking raid video](#) that they made, on their website)



Why Mastery Readiness?

Rebecca applied for the school to join the high-profile Teaching for Mastery Programme that has engaged almost a third of primary schools in England since 2015. However, receiving her application, the Great North Maths Hub suspected that Mastery Readiness support might be more appropriate for a school taking its first look at its maths teaching and learning in a long time.

Rebecca is a relatively new head for the school, taking up post in April 2018, after a couple of years in which the school had mainly survived on long-term supply teachers and leadership that had not stayed long. To complement her own 'fresh eyes' approach, she quickly formed a strong bond with Carolyn Strangeways (R/Y1 teacher) who has all the experience and local knowledge of having been at the school a decade.

One of Rebecca's priorities in developing the school, was to make the place more 'outward-facing'. On the day we visit, there is also a team of three teachers visiting from Suffolk, with the intention of building up a link between the two schools (both Beach Schools) that share a coastline, albeit at opposite ends of the country! As a maths enthusiast, Rebecca was also keen to raise the profile of maths in a school where none of the teachers or TAs could ever remember participating in any maths CPD.

What is Mastery Readiness?

There are a variety of reasons that might identify a school as one that could benefit from accessing Mastery Readiness before engaging with the main Teaching for Mastery Programme, for example:

- there may be demands from other sources or a fear of taking risks (particularly for those schools judged RI or Inadequate by Ofsted)
- staff may not be fully convinced of the benefits of mastery
- high staff turnover may make sustained change difficult
- there may not be the structures, systems or understanding in place to make teaching for mastery successful
- there may be competing priorities in the curriculum.

The Mastery Readiness Project works on five particular areas and does so in a bespoke way for each school. Teachers from schools involved meet as a 'Work Group' with teachers from other schools on the

programme every half term. They also receive six visits from the Mastery Readiness Lead who looks at each school's individual situation. This bespoke support allows the school to lead its own development but with the support and objectivity of a 'critical friend' with strong understanding of teaching for mastery.

Laura Tullock, Great North Maths Hub's Mastery Readiness Lead, is keen to emphasise that Mastery Readiness is not 'teaching for mastery lite' – it is instead preparing a school to participate fully and successfully in the Teaching for Mastery Programme the following year. As such, it is a long-term commitment, for sustained and manageable change.

Five Areas of Readiness

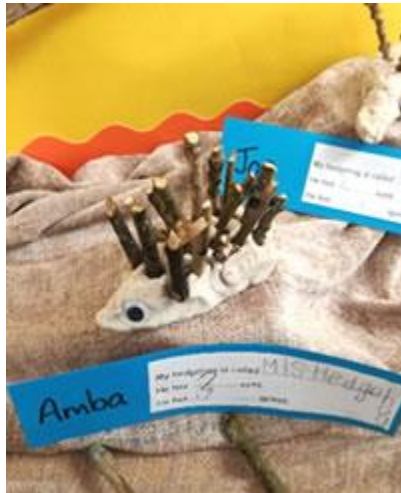
Visions and Shared Culture

The programme recognises that for a school to make positive changes to teaching and learning of maths, there needs to be a shared vision and culture. It helps schools to promote and create a shared vision for why mathematics is important, why they are choosing to embrace a mastery approach, and what they want to achieve through the mathematics curriculum.

Mathematical Mindsets

Working with schools on mathematical mindsets, Mastery Readiness Leads are challenging ideas that some children just can't do maths, and that mathematical ability is a fixed quantity. They also look at ways to help teachers feel positive and confident about maths and ways of promoting the importance of maths with the children. Are children enjoying maths and how can the school go about creating a buzz about maths?





Subject Expertise

Good subject and pedagogical knowledge is vitally important for teachers and TAs to feel confident in supporting children's mathematical learning. The Mastery Readiness programme can help schools to increase subject knowledge and confidence amongst the staff team.

Systems

In looking at systems, Mastery Readiness Leads may look at timetabling of maths, intervention systems, use of TAs, differentiation, assessment and schemes of work. The project offers support for leaders in evaluating the impact of current systems and considering alternative ways of working.

Arithmetical Proficiency

To engage fully with mathematical reasoning and problem-solving demands, arithmetical proficiency with basic number facts can help avoid cognitive overload. Schools on the Mastery Readiness Programme consider whether they have the necessary systems in place for encouraging and assisting arithmetical fluency.

What a bespoke school visit from a Mastery Readiness Lead might look like

Laura, Rebecca and Carolyn (the R/Y1 teacher) meet in the head's office, with tea and biscuits freshly baked by the school cook. (Ingenuously, Rebecca has stopped having to buy in meals from other schools by employing a cook, with a reciprocal arrangement that she uses the school kitchen for her own baking business). Laura has spotted, right from the outset, that maths is now getting a higher profile in the school, with a number of maths displays showing children involved in mathematical activity.



The beginning of the meeting is informal, and Laura is keen to catch up on what has changed since her last visit. She is hugely positive and encouraging. For Rebecca, there is an opportunity to step back and see the progress that has been made, which is not always obvious when working day-to-day. She says:

"It's like a person who's lost a lot of weight, but still feels like a fat person, looking in the mirror and realising the change."

And in their informal chat, Laura is able to ascertain where those changes have been made, and where the sticking points may still lie. There's a huge buzz between the two Lowick teachers about what is happening with maths in the school:

- They've bought lots of practical resources and have been using them – children found this hard to begin with but are now choosing to use them more independently



- Rebecca and Carolyn meet regularly and informally after school to discuss maths and the changes they are making to the curriculum
- Parents have noticed a difference and are being invited to a 'showcase' so that children can show them how the manipulatives are used
- Rebecca has been trying a 'keep up' approach to intervention
- They have been thinking a lot about how to create a positive mindset around mathematics with the children
- The school has managed to recruit a 'maths governor' who they decide should be invited to the next meeting with Laura.

Action Planning

Next Laura and Rebecca consider the action plan that began to be drawn up in their first meeting, and think about what can be done next:

- Rebecca is keen to increase the mathematical expertise of her TAs, some of whom lack confidence in maths. She realises how important it is that they understand the new approach to teaching maths and can reinforce it. It is difficult for such a far-flung school to access subject knowledge training for TAs available through the Maths Hub, but Laura is able to offer something bespoke for the school and its local school partnership, thereby benefitting all schools in the area.
- Rebecca acknowledges that the school culture does not currently involve 'maths conversation', except when she and Carolyn get together informally after school. She is keen to involve all staff in the buzz they are feeling and is forced to think creatively, with Heather's 'tidal absence' at the front of her mind.

Rebecca touches on issues of assessment, making provision for greater depth and 'keep up' intervention but Laura urges caution. This is about long-term sustained change and she recognises the difficulties of change and the need to do things step by step, for best impact. These are issues that will be covered later in the year. Being part of the Mastery Readiness Work Group will allow the school to benefit from the experiences of other schools on a similar journey. Their meetings with Laura will allow them to take an approach that fits exactly with where they are on that journey. Rebecca says:

"It's been much better for us, than the full Teaching for Mastery Programme, for this year. I've been passionate about maths forever, but the mastery approach is new to me. It was good to be able to say, from the outset, that I wasn't sure about it. But now I am understanding it better and feel ready for teaching for mastery."



If your school might benefit from participation in the expanding Mastery Readiness Programme, please contact your [local Maths Hub](#), or email [Emma Patman](#) or [Elizabeth Lambert](#) directly.



One school's experience of using the NCETM's mastery materials for the first time

The [Primary Mastery Professional Development materials](#) are now published for the whole of Spine 1: Number, Addition and Subtraction, for all year groups 1-6. Steeped, as they are, in the teaching for mastery work of NCETM and the Maths Hubs, how suitable are these materials for schools that have not yet picked up the teaching for mastery baton?

Although the beginnings of these materials have been available to KS1 teachers for some time, the KS2 end is much more recently published. So we'd love to [hear from KS2 teachers](#) about how you are finding them.

In the meantime, we report from a school in the South West of England in which the materials were piloted. The school is a Primary in an urban setting with high numbers of EAL children. Interestingly, this school was not involved in Maths Hubs or NCETM work at all, until approached to try out the materials, so we were particularly keen to hear what sense was made of the materials in a school that had not explicitly been working on teaching for mastery. We anticipate that their experience will be helpful to other schools coming to the materials 'cold'.

It is important to note that while the materials include plenty of lesson ideas and resources for use in the classroom, they do not attempt to provide a scheme of work, recognising that different schools have different requirements in this arena. Instead the focus is squarely on equipping teachers with the subject and pedagogical scaffolding required to be able to effectively develop a genuine and deep conceptual understanding in their pupils. The order in which concepts are introduced has also been carefully considered.

What follows is abridged from a report by Dr Alf Coles (University of Bristol) and Katherine Evans (University of Plymouth), who worked with the school in piloting the PD Materials, supported by the Economic and Social Research Council.

How were the materials used in the pilot school?

<p>2:2 Now explore a different context: buildings with floors above and below ground. Explore where the ground floor is and what happens if you go up/down the stairs or up/down in a lift. Ask children which floor they think could be labelled '0', and discuss how usually, in the UK, the 'ground' floor is labelled as zero, and that we count up from zero using each subsequent number to label the floors above the ground floor. Ask 'Which is floor three?', 'Which is the fifth floor?' etc. Then ask about the floors below zero/ground level. Discuss what these could be called (for example, 'first basement, second basement...' or 'first below ground, second below ground...').</p>	
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from [Y5: 1.27](#)

The school implemented work on the spine materials over two terms using a professional development model of: co-planning; co-observation; reflection. Teachers worked in teams of two or three teachers,

each team working across two year groups. Co-planning began at a staff meeting. Teachers prepared a week's work and part-way through the week observed each other. There were de-briefing sessions immediately afterwards. Some teaching sessions were also video-recorded for use in a subsequent staff meeting to identify teaching strategies.

The following teacher reflections were recorded during staff meetings, and are grouped according to themes.

The challenge of time, planning and resources

The issue of how to translate the teaching points within each spine document into a sequence of lessons was identified as challenging initially, as the materials are explicitly not a scheme of work. Following a second cycle, teachers began to feel optimistic about the impact these readily available and relevant resources could have on teacher workload.

"That's essentially my medium term planning for the last three weeks. A big positive that's come out of that is that I'm using one thing to plan my lessons from... That's been really nice and that's been a big positive for me for the last few weeks. I've enjoyed just using one thing to base my approach on." (Year 3 teacher)

Differentiation and inclusion

Initially, teachers felt daunted by the challenge of creating teaching and learning sequences that enabled all children to learn and make progress, differentiating for the huge range of prior attainment and understanding identified in their classes.

However, they were also able to reflect on the possibilities offered by the materials for re-thinking approaches to differentiation. Offering all children exposure to mathematical concepts and content, planning for enrichment activities that had a 'low-floor/high-ceiling' approach was seen as potentially constructive, and something that might teacher workload.

- 'Felicity wants to buy this mug.'



'What is the smallest number of coins she can use?'

<input type="checkbox"/>	£1 coins	<input type="checkbox"/>	50 p coins	<input type="checkbox"/>	20 p coins
<input type="checkbox"/>	10 p coins	<input type="checkbox"/>	5 p coins	<input type="checkbox"/>	2 p coins
<input type="checkbox"/>	1 p coins				

Felicity needs ___ coins.

from [Y4 1.25](#)

Teachers also reflected on the opportunity to explore new ways of working. These included mixed attainment groupings and offering children a greater level of choice in terms of how they self-differentiate their learning.

The power of all children participating in the same experiences was identified as contributing to a potential boost in self-esteem for those who might find learning mathematics challenging:

"It was lovely to have the lower (attaining) children back in the class participating, taking from it what they could, still working with TA's and adults in the room, but they were part of the whole. I had one child go home and tell his mum about school and that he'd enjoyed the maths lesson. He didn't get it completely but he was still able to go home and be positive about a maths lesson and he wanted work to take home so he could do it with Grandpa. He still hadn't got it but that positive attitude was there, which it hasn't been...that's a massive thing." (Year 4 teacher)

"Working [on the same task with all children] was challenging, however all the children were able to access at some level. There were concrete materials available, as well as large paper for recording. Their work was always visible to each other, which helped. All the children being in the room together felt good, no one felt excluded or like they weren't part of it. Also, there was no ceiling on the activity, so children could naturally extend and challenge themselves." (Year 2 teacher)

Reflecting on his observations of the higher attaining children in his class, the Year 3 teacher commented,

"Perhaps the challenge wasn't around the concept but around the skills of being a mathematician. They were forced to talk and think about maths from different angles and

perspectives. It wasn't about the answers but about process, being able to explain and reason. The spine materials really lend themselves to a focus on process." (Year 3 teacher)

One teacher commented on the opportunity for strong mathematicians to develop their verbal reasoning and social skills (and the potential difficulties this presented):

"It was interesting that S, within about five minutes has completed the first set [of missing number problems], but it was interesting to see her have to reason, and slow down and think about her maths. That's kind of the next challenge. She'd done half the code before I got over there but there was nothing on the paper apart from the code. And she was working with two children who I know it's very unlikely they would have been able to do that in their heads. So that's the challenge when you've got somebody like that in a group. Suddenly all the answers are written with no workings out and I didn't get back to talk to them again so I'm interested to go back now and see if they were talking and going back to look at the answers again. She just naturally got on with it and she's not the chattiest child so for her socially it's a good thing." (Year 5 teacher)

Teacher subject knowledge and development

The confidence of teachers and support staff in terms of their own understanding of the concepts, models used and technical vocabulary within the spine was recognised as important. Staff identified this as being an area of need in terms of staff development, and welcomed the time to focus on their own depth of understanding, as well as that of their pupils.

"For me it just made me think about maths in a different way. We were talking about the subtleties of what is division and when do you use the sharing method as opposed to making groups of... I wonder if I had just been following our old published scheme, would I have thought really as in depth about that?" (Year 2 teacher)

"The spine feels like permission to focus more in depth, for example following the spine to look at the 7 times table I've gone more in depth than the others. It feels like a luxury, it's liberating." (Year 3 teacher)

<p>3:5 As for sum-and-difference problems, work through some contextual sum-and-multiple problems. Continue to encourage children to check their answers using the sum.</p> <p>Then compare all of the sum-and-multiple problems you have explored, and ask children to identify similarities and differences between them. Emphasise that even though the contexts and numbers are different, all of the problems have the same structure.</p>	<p>Example 1: 'Bill earnt £60 doing odd-jobs one weekend. He earnt three times as much on Saturday as he did on Sunday. How much did Bill earn each day?'</p> <ul style="list-style-type: none"> 'There are four equal parts that sum to sixty.' <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">Sat</div> <div style="border: 1px solid black; width: 150px; height: 20px; display: flex; justify-content: space-between;"> <div style="width: 33%;"></div> <div style="width: 33%;"></div> <div style="width: 33%;"></div> </div> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;">Sun</div> <div style="border: 1px solid black; width: 50px; height: 20px;"></div> </div> <div style="margin-left: 150px; margin-top: -10px;">} 60</div> <p style="margin-top: 10px;">$60 \div 4 = 15$ this is the amount earnt on Sunday amount earnt on Saturday = $15 \times 3 = 45$</p> <ul style="list-style-type: none"> 'Bill earnt £45 on Saturday and £15 on Sunday.' Check: $£45 + £15 = £60$
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(Ctrl+Click to enlarge)

from [Y6 1.31](#)

Some teachers found that working with the materials encouraged them to challenge their own beliefs about their mathematical 'ability':

"I think I'm one of those mathematicians who says 'I can't do maths'. That was my upbringing, so I'm having to really shift my perception as a teacher. I know they can do it, but I don't have it in my head that I can always. So actually, it's really helpful to have that scaffolding." (Year 4 teacher)

Questions were raised about the need for the very precise and technical vocabulary that the materials encourage for use with the children.

"I think part of it comes from our own anxieties. That's not necessarily language that's statutory, it's correct, it's technical, but it's not required. So part of you as a teacher goes 'I've got so much going on, I'll skip that bit because it's not needed'. I think more of it comes from us and our own worries about children understanding it." (Year 5 teacher)

"So I was initially a bit worried about using words like divisor, dividend, quotient and stuff. But what I found was that actually, initially you think 'Oh my gosh, big maths words, EAL children!' But in a way they're better because they stand out more and it kind of ingrains them in their head and they remember the word divisor, and you hear them using it. Where as if you try and go around the houses and say 'what number are you dividing by?' it's a mouthful. That's more complicated and you end up with blank faces, and that's probably worse for EAL children." (Year 5 teacher)

Whole school approach

<p>3:7 Now also extend the strategy to subtraction of three-digit multiples of ten within 1,000, for example: $610 - 590$ $610 - 490$</p>	<p>The diagram illustrates three methods for solving subtraction problems. At the top, a number bond shows 610 at the top, with 590 and a question mark below it. Below this is a number line starting at 590 and ending at 610, with a tick mark at 600. Two blue arrows labeled '+10' show the jump from 590 to 600, and then from 600 to 610. In the middle is a box model with a top row containing '610' and a bottom row containing '490' followed by a question mark. At the bottom is another number line starting at 490 and ending at 610, with a tick mark at 500. Three blue arrows show jumps: '+10' from 490 to 500, '+100' from 500 to 600, and '+10' from 600 to 610.</p>
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(Ctrl+Click to enlarge)

from [Y3 1.19](#)

Teachers welcomed the consistency in use of mathematical representations that working together on the PD materials encouraged.

"I think [previously] we may have dabbled in using different representations but it was almost like an after-thought. I think we have introduced it alongside other teaching, whereas to dedicate time to exploring those representations and to practise using them and to really

understand them, and then bringing them into lots of other work, it feels more meaningful and more embedded in that sense.” (Year 2 teacher)

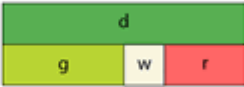



An outcome of the project was that the staff team took time to identify a series of agreed upon representations that were to be included in the school calculation policy. During the second term of working with the materials, teachers began to see the impact of the consistent approach:

“There are certain elements when done consistently you can start to see having an impact. So, the bar modeling we’ve been talking about. We did a lot of bar modeling for the part-part-part-whole and it’s kind of cropped up in my teaching since, naturally. We looked at it when we were doing multiplication and it’s kind of linked nicely into division as well. And now we’re moving onto fractions and when we did the introductory lesson to fractions the other day, again that bar model was something that instantly helped them to remember the concept of fractions...that it can be used in the same ways in different parts of maths is probably the most powerful thing I’ve noticed so far.” (Year 5 teacher)

Number fluency

A common discussion throughout the project was the barrier to progress imposed when children’s number fluency is not secure. The importance, for a lot of children, of working on number fluency as an ongoing focus alongside other content was also discussed.

“That’s potentially a huge barrier to being able to access the rest of the content. Just a piece of assumed knowledge that children will have by a certain point, and the reality is that actually a lot of children don’t.” (Foundation Stage teacher)

Teaching point 1:	
Mathematical relationships encountered at primary level are either additive or multiplicative; both of these can be observed within the structure of part-part-whole relationships.	
Steps in learning	
Guidance	Representations
<p>1:1 At primary school, children come across only two types of mathematical relationships: additive and multiplicative. Different examples are illustrated opposite with Cuisenaire® rods (see Appendix for an explanation of the colours and labelling of Cuisenaire® rods).</p> <p>A relationship is additive if the quantities are related through combining, partitioning or direct comparison, and involves the operation of addition or subtraction. A relationship is multiplicative if the quantities are related in a proportional sense and involves the operation of multiplication or division. Overlap between the two occurs within the context of repeated addition, which can be seen in both additive and multiplicative terms; this occurs within a part-part-whole structure where the parts are the same size and, in these instances, multiplication is often a more efficient strategy for calculation. The third example opposite can be seen as</p>	<p>Summary of relationships:</p> <ol style="list-style-type: none"> Additive – combining or partitioning  Additive – comparative  Additive or multiplicative  Multiplicative – scaling 

(Ctrl+Click to enlarge)

from [Y5 1.28](#)

Oracy

The focus on oracy was identified by teachers as one of the biggest strengths of the PD materials. Throughout the materials, 'stem sentences' are suggested to enable children to 'talk the language of maths'. Many of the teachers found that this increased their own confidence in knowing how to communicate a concept really clearly. They commonly reported that the children really seemed to enjoy using the language of the stem sentences and that in many cases embedding this language supported children's reasoning skills.

"I thought the oracy side of those spines was really strong and really clear. Sometimes one of the trickiest things to do when planning a lesson is to think 'OK, how many different ways can you say this?' And of course you go into depth with the vocabulary, but you're given stem sentences that you can link across other areas." (Year 6 teacher)

"Some of the best lessons we had out of the spine focused on the oracy point, where, for example, the whole class practice you would fill in the 7 times tables, using prior knowledge. So the stem sentence was 'I know from my ___ times table that ___ times ___ is ___.' And that helps to create that link. There's that classic thing that children find tricky, is that duality between the tables – 3 times 7 is 21, but so is 7 times 3. And just by saying it, it starts to cement that." (Year 3 teacher)

We asked teachers in the trial to make recommendations to colleagues in other schools who might consider using the materials. This is what they suggested:

- **Do it for a prolonged period of time.**

"Do it for a period of weeks, you'll become more comfortable with it. I think we all found it tough when we first looked at it, and then we were really trying to unpick it. It was tricky at times, but that was the benefit of working together, to be able to say 'I don't know what that means, what should I do for that?'" (Year 3 teacher)

- **Trust the materials.**

"It feels that it gives you permission to look at things in more depth, and there's such a pressure to get through our curriculum and you feel, 'Oh my goodness I've got to do X and I've only got 3 lessons', where as (with) the spine I could see what the objectives were, that we were going to get there, but actually we could do that in a way that felt like it was much deeper learning than just using a worksheet to whip it through and tick off that we've done that." (Year 4 teacher)

- **Do it in order and read ahead.**

"It sounds obvious but there were points where I was thinking why am I doing this, this doesn't make any sense to me, why am I covering this now? But then it turned out three points, later, or four points later, or five points later that bit of learning was really key for their understanding of something."

- **Be flexible and know the content.**

"You may cover more teaching points than you thought you were going to cover, or you may not get through the teaching that you thought. So, I suppose it's always about looking ahead and always having maybe a large amount of planning time ahead of yourself so that you can go into that and push them further within the lesson."

Observers of the trial also recommended that a planned cycle of professional development around implementation seemed crucial. Headteacher commitment to use of the materials across the school was vital in making time for joint planning and reflection.

Is your school using our Mastery PD Materials? Please [let us know](#) how you are getting on with them.

Considering introducing the Mastery PD Materials for use in your school? Spine 1: Number, Addition and Subtraction is available now, with Spine 2 (Multiplication and Division – as trialled by this school) due to be published in the spring, and Spine 3 (Fractions) by the end of next year.