The NCETM Maths Podcast Episode 89

Teaching maths in Year 6

Julia Thomson [JT]: Hello, and welcome to the NCETM Maths Podcast. I'm Julia Thompson from the NCETM Communications Team, and in this episode, Debbie Morgan, the NCETM's Director for Primary is joined by Suzanne Matthews, Assistant Maths Lead at Möbius Maths Hub, which works across the Berkshire and Wiltshire area. Suzanne also works across a trust of 25 primary schools.

In this episode, Debbie discovers how maths is taught in Year 6 across Suzanne's trust, and together they explore how schools can prioritise and address gaps in children's learning without narrowing the curriculum. We find out what SATs readiness and secondary readiness look like in mathematics, and how to secure deep and sustained learning in those crucial final months of primary school.

Drawing on Suzanne's experience based on collaboration across her trust, this conversation looks closely at some of the approaches leaders and teachers can take to ensure pupils leave Year 6 confident, secure, and well prepared for the next stage of their mathematical journey. We hope you enjoy the episode.

Debbie Morgan [DM]: Hello, Suzanne. Really lovely to have you here today. Can you just tell me a little bit about the context that you work in?

Suzanne Matthews [SM]: Sure. I am Primary Assistant Maths Hub Lead for Möbius Maths Hub. I am also a trust Primary Maths Advisor for a multi-academy trust, the White Horse Federation, based Swindon and Wiltshire, with some schools in Oxfordshire and Berkshire as well.

DM: How many primary schools have you got in your trust, Suzanne?

SM: We have 25, including one SEMH (Social, Emotional and Mental Health) special school, at the moment.

DM: Thank you. So how do you teach maths across your trust?

SM: Well, we follow the teaching for mastery approach. Very much grounded in the Five Big Ideas in Teaching for Mastery, securing deep understanding of mathematical structure, making sure that we have a coherent, small steps so that we're building learning upon learning. We have a strong focus on representation and language in all that we do.

We also, across all our schools, use Mastering Number at Reception and KS1, to build that really strong foundational knowledge in number.

DM: Thank you. Can you tell me a little bit about your approach in Key Stage 2 in particular, and in Year 6?

SM: So if we're focusing in on the Year 6 pupils and obviously aiming for the end of the year and where they need to be in Year 6, obviously we all know that the children have to sit their Key Stage 2 assessments at the end of the year or in May, and we try and emphasise the fact that they're not Year 6 SATs, they're KS2 SATs. So much of the content being assessed is from Year 3, 4 and 5. And so, we try and have a strong focus on not just concentrating on what's in Year 6.

For example, in 2025 about three quarters of the content was from Years 3, 4 and 5. And that's not uncommon if you look back to 2024 and further back, the percentage of content is similar. So, there is a majority of content that is being assessed that comes from Years 3, 4 and 5 curricula. So, we emphasise that with our teachers and we try and ensure that that they have a deep understanding of the Years 3, 4 and 5 content before they think about Year 6.

If we think about the fact that maths is progressive, if we think of it in terms of a wall, if you're building upon the strong foundations from KS1, you're building the Year 3 learning on the Year 4 learning, and then the Year 5 learning builds on that, and then the Year 6 on top of that.

And if there are gaps in that learning, then that wall will tumble down. So, we try and make sure that that we're plugging those gaps as we go.

DM: Thank you. Okay, so can you tell me a little bit more about prioritising?

SM: Prioritising content in in Year 6 is not just about the SATs, it's also in terms of their learning; we want really secure learning from the children. So, if we are thinking about the advice from the Coordinating mathematical success report from Osted in 2023, they said a school's curriculum should emphasise secure learning rather than coverage.

So, we're looking for that deep understanding of the mathematics rather than just going through the motions of getting through all the content. Also, that's reiterated in the state-funded school inspection toolkit that came out in November. So, leaders make sure that pupils bring strong foundations for accessing the curriculum.

So again, we're thinking about making sure that all that underpins the learning is secure and in place so that it can be built on.

DM: So, thinking specifically about children's factual and arithmetic fluency. Obviously, there's a separate test on that for KS2, but how do you keep that fluency going in Year 6 so that children are ready and have the same level of fluency when they meet that end of KS2 test?

SM: One of the things that we do, if we are talking about factual fluency, Year 4, we continue that through Year 5 and in Year 6 where needed. And if we're thinking particularly about arithmetic, one of the things that we do is we give the children arithmetic questions daily.

We give them eight questions in eight minutes each day. It's not a full SATs test, but the questions are SATs-style questions and every week they'll get the same group of questions with different numbers, and once they've done their eight questions, we'll do a quick review.

The whole session takes ten minutes a day, and then we'll pick that up in another session. We call it 'Maths on Track', where we'll go over and we'll have a look at how they've answered the questions, whether there are any misconceptions, and whether they're being fluent and understanding mathematical structure.

Are they being mathematically observant and really looking for the most efficient strategy? I think one of the reasons children sometimes struggle to get through an arithmetic paper is - 36 questions in 30 minutes - that they're resorting to formal written methods, and they haven't noticed that there's something about the numbers that are lending themselves to a more efficient strategy.

So, we work on that in our Maths on Track sessions, and then the next week they'll get the same set of questions but with different numbers to practise. So that they're getting used to looking out for that mathematical structure within the questions.

DM: I like the way you talked about children noticing and looking for mathematical structure. Do you support them in doing that for other types of SATs questions? Maybe not in the arithmetic paper.

SM: Oh, absolutely, yes. We would also give them opportunities to practise reasoning style questions. Again, we're not setting loads and loads of SATs tests, but we would have a look at reasoning tasks as well.

One of the strategies we would use would be goal-free problem solving, where you get rid of the question and just get them to look at the situation. So, we might get rid of what the actual question is. I don't know what it might be, how many were there all together?

We just get rid of that part, and we look at a question and say, What do you notice? What can you tell me? And then what could the question be? We do lots of that with our children, sort of identifying mathematical structure with this in certain types of question.

We do that throughout their time at school, not just in Year 6, but there's a stronger emphasis on it in Year 6, certainly.

DM: Yes, I was thinking that will be something you do throughout the school. And one of the dangers of course is when children are in an unusual situation, such as in KS2 SATs, sometimes they feel they can't do what they would normally do. That it's somehow cheating.

So, I suppose it's about giving them the confidence that they can react in just the same way as they would with any other question that they were doing in class.

SM: Absolutely. And that sort of ability and permission to just notice for a bit, stop and notice. We call it consider the problem.

So, we're considering it first, we're not, we're not doing anything. We're just considering it. What's it asking me? What do I already know? Or is there information in here that's useful? Is there information here that's not relevant? But just giving a moment to stop before we rush in and calculate.

DM: Lovely. Thank you. Really good strategy. You mentioned before that not all domains carry the same weight. Could you say a bit more about that foundational knowledge, particularly in terms of preparing children as they move into secondary? What would you place the greatest emphasis on?

SM: Within the test, if you break down the percentage of content for different domains, there is a much stronger emphasis on number. And within number, there's a much stronger emphasis on calculation fractions and decimals. And it's not just about SATs - we keep saying that, and that's important to reiterate.

What we're thinking Year 6, it's secondary school and we spoke to some secondary school teachers about what they would like children to arrive at secondary school secure in, and the things that they said were place value, including decimal numbers, knowledge of times tables, four operations factors and multiples, and following on from that, an understanding of what a fraction is. And if you have a look at the sort of domain breakdown within number, those are the domains that are focused on in the tests. So the tests are testing what secondary school teachers would like children to be secure in.

So, I think they're a safe bet for preparing children for their next phase of education as well.

DM: Okay. So just going back then to preparing children, would you like to reiterate what are the strategies that you use?

SM: I think first and foremost, it's about knowing your children really well.

It's about finding out what they don't know and teaching it to them, we need to know what they don't know, and we need to know how to teach it to them. So, if we're thinking about the wall analogy that I mentioned earlier, and we've got the gaps, for example, for a child in Year 6, there's clearly something missing from Year 3. My go-to place that I advise teachers to use are the ready-to-progress criteria from the DfE primary guidance that came out in 2020. And then the NCETM has exemplification of each of those ready-to-progress criteria on their website. You have a PowerPoint for each of the ready-to-progress criteria, and it takes you through the learning journey of how to build that learning for the children.

They're easy to use, they were designed so TAs could use them. So you don't need a lot of prior subject knowledge to be able to do it, because that's within the materials and it supports you in working with children to build up the understanding where those gaps are there; it's a valuable resource.

DM: I think, particularly about times tables, obviously children are going to do better in their SATs if they are fluent in their times tables. And I know we've already mentioned fluency, but have you got any strategies for how you ensure that children are fluent in their times tables?

SM: As I said before, we don't just stop at the end of Year 4: we continue practising all the way through Year 5 and into Year 6. But what's important if they don't know their tables, I have heard teachers say, 'Oh they just can't do their tables', and they can probably do some of them. We need to know which specifically they can't do. So which table is it that they don't yet know? Which facts within that table do they not yet know? It may be that there's just a few facts.

So, for example, if they don't remember 8 multiplied by 7 is 56. Eight 7s is 56, then maybe we could create a little bookmark for them, stick it on their table. Repeat it regularly. The important thing is little and often. We're not just going to say, oh, they don't know the eight times table, but which facts within the eight times table do they not know?

Let's focus on those or spend some time on those till they're really embedded, and then move on to the next one. So, it's little and often, which I think is much more impactful than just the whole great big: we need to learn all our tables.

DM: Thank you, that's really helpful. Would you like to talk about how they then might use their tables, for example, if they know eight 7s are 56?

SM: So obviously it's not just about knowing the fact: they also need to know how to apply it. They're developing multiplicative reasoning as well. We might ask them things like, if I know eight 7s are 56, what else do I know? 56 divided by 8 is 7.

I might know the facts - we call them 'facts for free' - that come alongside that. So, there's the two multiplication and two division facts that come alongside that one fact. I might think, if I've got eight 7s are 56, what would one lot of 7 more be? One lot of 8 more. What would that be?

I might play around with place value. For example, if I know eight 7s are 56, what would 70 multiplied by 80 be? Children love doing this with place values. You could find the most unusual one, so, what's 0.7 times 8,000 or what's 0.008 times 7 million? They get very excited and they'd try and find the most unusual one or one that I haven't thought of, they love playing around with that.

We also give them activities like that to help them apply their factual knowledge to get them really secure with understanding what it means within the number system.

DM: Thank you. So just in summary really what are your key points to summarise what you've talked about?

SM: So, first, I think I've already said this, but it's important to know your children well. You need to know what they know and what they don't know and find out what they don't know and teach it to them, I think that's the main point. Once you know that, then you can think about what you need to prioritise. What do they need to know really deeply now, and what could they learn more deeply after the SATS? We're not saying don't teach the whole curriculum, but there are some things which are really important that they need to know before May, and we've already talked about what those might be.

And then there are some things that we'll perhaps look at more deeply afterwards, to prepare them for when they move up to secondary school. We need to assess and track them regularly - everyday assessment within the classroom. I'm not necessarily talking about doing a test all the time and all that involves, but we want to make sure that we really know how they're progressing.

And then also, I think this is important, we want to make sure that they have enough practice to build fluency, not just lots of SAT test practice, but we really want to build fluency and success, so that they can gain confidence and stamina to prepare them not only for the tests, but their next phase of education.

DM: Thank you, Suzanne. That's been really helpful and I've really enjoyed talking to you. Thank you very much.

SM: Thank you.

JT: Thank you very much to Debbie Morgan, the NCETM's Director for Primary, and Suzanne Matthews, Assistant Maths Hub Lead at Möbius Maths Hub for sharing their expertise with us in this episode. And thank you for listening. We will post links to the guidance and resources mentioned by Suzanne in our show notes, and you can also find them in the.

In the *In the classroom* section of the NCETM website, there are the DFE mathematics non-statutory guidance for key stage one and two, and the NCETM's exemplification of the ready-to-progress criteria, and the latter comes with the pupil-facing slides as Suzanne mentioned. If you enjoyed this episode, we would be very grateful if you could please take a moment to follow us and click the notification bell, so you don't miss our next episode.

And if you can spare the time to positively review the podcast, we would so appreciate it. Finally, we know that many of you listening to this episode will be Year 6 teachers, and we want to take this opportunity to thank you for all of your hard work. It's a very rewarding but undeniably challenging year group to teach.

And we will be thinking of you and your pupils in May and wishing you all a wonderful summer term together. Until next time.