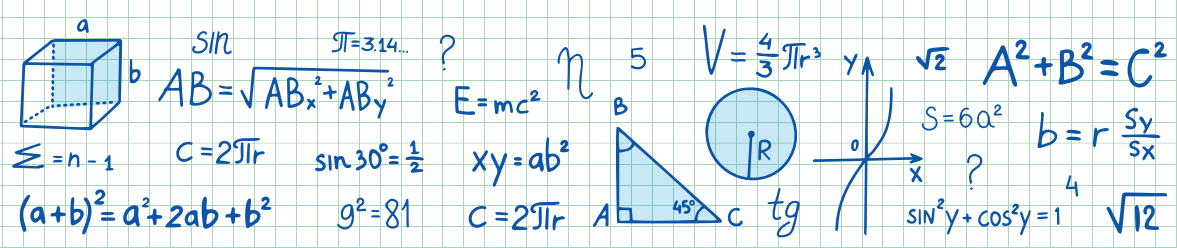


Peter Mattock

# Leading Maths

The essential guide for new and aspiring maths leaders



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# Acknowledgements

My last two books have had very personal dedications to my (now) wife, Rowan; my mum, Lesley; my children, Erin and Mollie; my grandparents, Ted, Alan, June and Patricia; and my closest friends in the world, Chris, John and Paul. You all remain loved and appreciated for the joy and support you have brought me. Without all of you, I wouldn't have got anywhere near to where I am today.

But the dedication for this book is slightly different. This is to all of the maths leaders and aspiring maths leaders out there. Driving forwards the teaching and learning of mathematics that our pupils receive is an incredibly important job. As I write this, the landscape of education in the UK is making this an increasingly difficult job. For anyone who takes it on in any capacity, no matter whether you ultimately feel successful at it or not, whether you do it for just a few years and then decide it isn't for you or whether you make an entire career out of it, your hard work and effort should never go unrecognised or unrewarded. I am not in a position to reward you, but I do recognise the challenges you face.

Of course, I need to say a special thank you to Becky Lawrence, Rhiannon Rainbow, Jemma Sherwood and Dave Tushingham who have gifted their knowledge and experience alongside my own in the composition of this work. Your contributions are greatly and warmly received, and my deepest appreciations go to the four of you.

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# Introduction

I am under no illusion; I have been incredibly lucky in my career so far. For the most part, the decisions I have made have worked out (and even the one that might not have been considered to work has taught me something). I have been in the right place at the right time to take up several opportunities. I have worked with excellent colleagues who have given me the benefit of their experience and led excellent staff who were open and adaptable to the changes I wanted to make. I have managed to find environments and surround myself with people who have a similar educational philosophy to my own, both in general and specifically in relation to mathematics (at least, for the time I have had a philosophy on such things). As with any career, particularly those in education, there have been ups and downs along the way – some of which can hopefully be avoided by others when they read this.

I trained to teach at the University of Leicester in 2005 and 2006 and took my first job as a maths teacher in July 2006 at Fitzharrys School in Abingdon, Oxfordshire. Fitzharrys was (and still is) a ‘good’ 11–18 school with relatively stable staffing and an intake that was predominantly white working and middle class. I am forever grateful to Dr Susan Tranter and the staff at Fitzharrys for starting my contract before the end of the school year, which allowed me to orient myself prior to my first full year and meet some of the pupils I would teach the following year (including my new form group on the Year 7 induction days), which meant I could spend my summer holiday preparing for my first classes rather than having to take a temporary job to keep the bills paid. I understand why this practice has become less prevalent in the years of tightened budgets, but I think this is a shame as I know how valuable it was for me as a newly qualified teacher.

When I first got to Fitzharrys, I became particularly interested in working with what were termed at the time ‘gifted and talented’ pupils. I read copious amounts of research by authors like Janet Bates, Sarah Munday and Dr Barry Hymer (helped by a membership of the education library at the University of Oxford) and even started an MA in gifted and talented education (which unfortunately I had to cut short when I took my first head of department role). Within a couple of years, I was recognised as a lead teacher in this area and was supporting the development of other teachers in

working with gifted and talented pupils. I also began running professional development for initial teacher education (ITE) students at the invite of my PGCE mentor, Dr Geoff Tennant, initially at the University of Leicester and then at the University of Reading when he moved to a role there as senior lecturer for secondary maths ITE.

For the beginning of my third year at Fitz, I took my first maths leadership role as second-in-charge with particular responsibilities for the Key Stage 5 curriculum and outcomes as well as the use of ICT in maths and formally mentoring ITE trainees (I had done some co-mentoring with another member of the department prior to this). I kept this role for a little over a year, and then in January 2011, I took my first head of department role at the newly created Oxford Spires Academy in Blackbird Leys, an area in the south of the city of Oxford.

Oxford Spires Academy was different from Fitzharrys in virtually every way. Although a 'new' academy, it was replacing Oxford School which had only recently emerged from the National Challenge.<sup>1</sup> The school had seen a reasonable amount of staff turnover and served an ethnically diverse community with high levels of deprivation and disadvantage. The new academy was very effective in addressing the progress and attainment issues of its predecessor, and it is still one of the periods of my career of which I am most proud; in my first full year at the school, we achieved what were (and I believe still are) the highest maths results in the school's (or its predecessor's) history. This was recognised during an Ofsted visit the following January (2013), which was very complimentary about the maths department, including this comment: 'Students make particularly impressive progress in English and mathematics, often exceeding expected rates of progress, compared with students in similar schools.'<sup>2</sup>

It was during my time at Oxford Spires that I was able to take up a number of opportunities that extended my knowledge and experience of education. I co-ran a coaching programme for teachers, I sat on the board for ITE at both Oxford University and Oxford Brookes University, and I even ran ITE for a year at the school whilst the assistant head teacher, who was normally in charge of ITE placement students, had a leave of absence. All these experiences taught

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1 A. W. Darzi, *Schools: National Challenge*. HL Deb (10 June 2008), vol. 702. Available at: <https://hansard.parliament.uk/Lords/2008-06-10/debates/08061086000008/SchoolsNationalChallenge>.

2 Ofsted, School Report: Oxford Spires Academy (9–10 July 2013). Available at: <https://files.ofsted.gov.uk/v1/file/2263369>.

me various lessons about leadership in general (which I will discuss in later chapters). However, I think the one opportunity that shaped my views on maths more than any other was the chance to produce professional development videos for the Key Stage 3 section of the ActivTeach platform from Pearson in and around 2013. It was here that I first came across the concrete-pictorial-abstract approach to mathematics education, which would spark my interest in the use of representations and manipulatives and would shape the latter half of my career to date, both in terms of my own practice and philosophy as well as how I have set up my departments and steered my team's development.

Due to my family's relocation back to the Midlands, I left Oxford Spires to take a role as director of mathematics, business and ICT at Nuneaton Academy in January 2014, my first role in an extended leadership team. Nuneaton Academy was simultaneously like a mix of both my previous schools and like nothing else I have ever experienced! The school had the high deprivation of Oxford Spires alongside the majority white ethnicity of Fitzharrys. However, what Nuneaton Academy taught me (in the short time I was there) was that without strong leadership from the top, particularly around expectations and behaviour, schools simply don't function well. Although I don't regret leaving after such a short time, as my next position was the defining role in my career, I do look back and wonder whether I could have been part of the transformation that the school needed to undergo (and I am pleased to say seems to have undergone in the intervening years).

And so, in August 2014, I started my role as director of learning for mathematics and numeracy at my current school, Brockington College in Leicestershire. Although ostensibly quite similar to Fitzharrys (less than average deprivation and majority white ethnicity, although only 11-14 at the time and 11-16 now), the challenges were completely different (and not just because I didn't actually lead the mathematics department at Fitz).

At the time I joined Brockco, it was a high school, taking pupils at age 11 and sending them on to an upper school at age 14. However, the school was transitioning (along with most of Leicestershire) from a high school/upper school model to a straight-through secondary model. My first year was the last year that the school was to be an 11-14 school; instead of sending the 14-year-olds off to an upper school that year we would keep them on to become the school's first Year 10. This meant that a big part of the early years of my role were



spent designing and implementing the curriculum for 14–16, as well as recruiting and embedding the extra staff the department would need as it transitioned to 11–16.

Although I had done some curriculum planning at Oxford Spire, this was my first real experience of designing a coherent experience for pupils over a significant time span. It was also somewhat backwards, due to the nature of the transition; I think most people would prefer to start curriculum development chronologically, and so begin with age 11 and work up to age 16 (we will explore curriculum planning and development further in Chapter 4), but we had to focus very much on the 14–16 curriculum first, before going back to the 11–14 curriculum.

It was at Brockington College that I first got involved with the National Centre for Excellence in the Teaching of Mathematics,<sup>3</sup> first gaining my accreditation as a professional development lead and then training in the first cohort as a secondary teaching for mastery specialist, leading to becoming the secondary teaching for mastery lead for the East Midlands South Maths Hub. Combined with my work as a specialist leader in education, this was a great opportunity to work with schools and practitioners across the East Midlands and help to plan for their development.

Leading maths at any school is a unique challenge. Being a ‘core’ subject comes with pressures that are unlike many other subject areas. In addition, the relatively abstract nature of the subject content combined with the contrasting societal and often parental attitudes can make mathematics a Marmite subject; whilst all pupils recognise its importance (those who say they don’t care invariably mean that either they struggle with it or they are so disengaged with school in general that their attitude isn’t subject specific), it is simultaneously quite acceptable to be ‘not good at maths’. Leading a subject area in schools is often about managing what seem at face value to be contradictions, and nowhere is this truer than in leading maths.<sup>4</sup>

Many volumes have been written about leadership, both in general and specifically in education. Huge amounts of research have been conducted into the most effective leadership styles; programmes

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<sup>3</sup> See <https://www.ncetm.org.uk>.

<sup>4</sup> I have written about being a new head of department in: P. Mattock, Ten Steps to Surviving as a New Head of Department, *TES* (21 May 2017). Available at: <https://www.tes.com/magazine/archive/ten-steps-surviving-new-head-department>.

allowing people to determine their leadership style are abundant. Books and guides on leading at all levels are readily available in all formats. It isn't my intention to rehash this research or advice (although I may touch on it on occasion). What does appear to be lacking is detailed advice and guidance on how to approach leadership in specific subject areas. This is what I am hoping to address in this book – to take the lessons learned from nearly 15 years in maths leadership and explore the challenges and rewards that come with this position.

We will start by looking at how we actually secure a role in maths leadership, before moving on to explore how to start making the most of the role and how to manage the day-to-day demands. From there, we will switch focus to the more long-term, strategic view of maths leadership, including how we might work with our team to develop high-quality mathematics teaching and learning for all pupils. We will then turn our attention to dealing with issues that arise in the leading of mathematics – in particular, results and accountability as well as difficult situations more generally. Following this, we will address how to go about adding to our teams, how to manage an inspection, developing improvement plans and the appraisal process, before finally touching on taking maths leadership beyond our specific school and into system leadership. Each chapter will give specific examples from my own experience and will end with a summary of the key points and advice from the chapter.



# Getting the job

There is an old belief in education that to get a leadership role you have to be doing the job before you start. Clearly, this doesn't sit well; if you are doing a job then you should have the title and pay commensurate with it. What I think this belief does indicate correctly is that, if you are going to apply successfully for a role in maths leadership, you will need to be able to speak from experience about how your career to date has provided the attributes, skills and knowledge necessary to be successful in the role for which you are applying. In most person specifications for maths leadership roles these boil down to (although are not limited to):

Attributes	Skills	Knowledge
<ul style="list-style-type: none"> <li>● Passion for subject.</li> <li>● Commitment to continuing professional development of yourself and others.</li> <li>● Positive personal characteristics (grit, integrity, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>● Excellent classroom practitioner.</li> <li>● Able to analyse data and plan interventions.</li> <li>● Able to motivate and enthuse pupils and staff.</li> <li>● <i>Able to demonstrate impact of their work.</i></li> </ul>	<ul style="list-style-type: none"> <li>● Up-to-date knowledge of the latest pedagogical initiatives.</li> <li>● Knowledge of strategies for raising attainment.</li> <li>● Knowledge of wider educational landscape (may or may not be subject specific).</li> </ul>

It won't have escaped your attention that 'demonstrating impact' has been *highlighted* here. In recent times (at least at the time of writing), Ofsted's focus on curriculum, particularly on the three I's of intent, implementation and impact, has led to a renewed focus on leaders at all levels being able to demonstrate the impact of the

work they do and the initiatives, strategies and decisions they implement.<sup>1</sup> An important point to consider with the demonstration of impact is that it doesn't automatically lead to a reliance on numerical data. There are many ways to demonstrate the impact of an initiative depending on what we are aiming to achieve; it could be feedback from learning walks or work scrutiny, pupil voice, notes from appraisal or many other qualitative sources that demonstrate impact alongside quantitative sources of data, like attainment or progress results, behaviour points or residual measures, for example.

For all of these attributes, skills and knowledge, there are ample opportunities for a classroom teacher to demonstrate concrete experience. The key is to look for, ask for and, if necessary, manufacture opportunities to gain experience in these areas. Such opportunities might include, amongst many others:

- Starting up an enrichment club for higher attaining mathematicians.
- Leading on developing an aspect of mathematics teaching during departmental meeting/INSET time.
- Organising and helping pupils to prepare for local or national maths challenges.
- Reading research or attending conferences and implementing changes as a result (in your own practice if not across a team).
- Offering to lead on designing and implementing an intervention for lower attaining pupils.
- Analysing your own class assessment or homework data and implementing your own interventions in class.
- Negotiating an appraisal target to focus on a key area that you wish to demonstrate.

An excellent strategy to support your preparation for applying for maths leadership roles is to keep a professional journal of the opportunities you access and, importantly, the outcomes from those opportunities. For example:

- If you set up an enrichment club, how many pupils attended? Did the number of pupils attending increase? Did their results improve? Did their attitude to mathematics improve?

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1 Ofsted, Education Inspection Framework (updated 11 July 2022). Available at: <https://www.gov.uk/government/publications/education-inspection-framework/education-inspection-framework>.

- If leading on developing an aspect of maths, did subsequent learning walks note improvements in the teaching and learning of this aspect? Does work scrutiny show improvements in pupils' understanding of this idea?
- If you are helping to prepare pupils for local or national maths challenges, how did they do? Was this better than in previous years?
- If you are implementing ideas from research or conferences, what did you change? What impact did the change have? Do pupils prefer the new approach? Do results show that it has benefitted pupils? Does staff voice suggest it has improved workload or well-being?
- If implementing an intervention (either across classes or within your own class), has it addressed the identified issue? Do the results show improvement? Has pupil attitude improved? Are pupils more confident in the area of the intervention?

A common issue that arises when people are applying for maths leadership roles is that they simply forget to include details of relevant experiences, either not mentioning them at all or not providing the concrete examples that can prove so crucial during the interview process. Keeping a journal of these experiences, referring to it in an application and studying it in the run-up to an interview (if needs be, printing out pages and taking them with you) are all excellent ways to ensure that you remember to mention those things that will help you to be successful in gaining the role.

Of course, the list of attributes, skills and knowledge above is not exhaustive, and every person specification is subtly different. Another important strategy to consider when you decide on a maths leadership role (or are ready to move on from one role to the next) is to look at as many person specifications and job descriptions as you can, even for roles you wouldn't necessarily consider applying for. Job descriptions can tell you a lot about what the school sees as the key aspects of the role. Are they talking about a need to develop the curriculum? Or is supporting new teachers more prominent? Is there a big emphasis on setting high expectations (which may indicate a need to support behaviour)? Or is the emphasis more on improving results?

In a lot of cases, schools have standard job descriptions that don't change from one appointment to the next, but sometimes they will tailor it to emphasise what they see as the most important priorities of the role (personally, I think more schools should do this). Even if a school is using their standard job description for a leadership role, it can still operate as an important checklist of the key responsibilities it will entail – and at the very least, it can give you some prompts to talk to others about if there are aspects you want more information about, either at your current school, the school you are interested in applying to or simply with your wider professional network.

Undoubtedly, though, the key document in any application pack is the person specification. If the job description tells you what the school expects a successful candidate to do once in post, then the person specification tells you what sort of candidate they expect to be able to fulfil those responsibilities. Looking at lots of person specifications can be really useful in highlighting any areas or experiences that you haven't yet had the opportunity to develop, and which you can then take steps to address. The first thing school leaders will usually do when shortlisting candidates (beyond noting any obvious deficiencies in qualifications or experience) will be to compare the details of the application form and covering letter (where applicable) to the essential and desirable qualities of the person specification. With a strong field, any question mark over whether a candidate has met an essential requirement of the person specification will usually lead to that candidate not being shortlisted for interview.

## Interviews

When it comes to interviews there are a few common elements. Clearly, there will be an interview panel including senior staff and possibly a governor. There is usually a lesson observation, although some schools have dropped this element for senior maths leadership roles (the logic being that you wouldn't have progressed to this point without being able to teach a lesson to a good standard). There may be a pupil panel. There may be interview tasks like analysing data or observing lessons. There is often a tour of the school (don't be fooled – this is still part of the interview process and pupils and staff will feed back). How many of these and in what order will depend on the individual school.

# Leading Maths

Offers practical guidance and advice on how to approach maths leadership and explores the challenges and rewards that come with this unique position.

Leading maths at any school is a demanding challenge and comes with pressures not experienced in many other subject areas. The relatively abstract nature of the subject content, combined with the contrasting societal and parental attitudes to mathematics, can complicate communication and stifle progress. Most pupils and parents will recognise the importance of maths, but many feel it's perfectly acceptable to be 'no good' at it. Leading maths in schools is about managing these contradictions and getting the very best out of every teacher and pupil.

Backed up by specific examples from fifteen years of his own maths leadership experience, Peter Mattock first explores how ambitious maths teachers can gain a leadership role and then details practical ways of managing the daily pressures and demands that come with it. These include results and accountability, dealing with difficult situations, how to manage an inspection, developing improvement plans and the appraisal process. The author also touches on taking maths leadership beyond one specific school and into system leadership.

The book contains contributions from experienced maths leaders who examine specific approaches to leading maths across phases and in different settings, including multi-academy trusts.

An essential guide for current, new, or aspiring maths leaders.

A vital read for anyone in maths leadership.

Lisa Coe, former Trust-wide Primary Maths Lead

This book has something for everyone, whether you are leading a department, aspiring to have a leadership role, are a line manager for maths or someone who just wants a better understanding of the challenges faced by the leader of maths.

David Faram, Director of Learning (Mathematics), The Trinity School

What Peter Mattock has created is incredible. A definitive insight for leaders in mathematics.

Kapileshh Nagar, Head of Mathematics, Moat Community College

This book is packed full of helpful advice for a head of maths.

Jo Morgan, Head of Maths, writer of *resourceaholic.com* and author of *A Compendium of Mathematical Methods*



**Peter Mattock** has been teaching and leading maths for over 15 years. He is a specialist leader of education (SLE) and an accredited secondary maths professional development lead who regularly presents at conferences across the country. Peter also develops teaching for mastery in the secondary school classroom, having been part of the first cohort of specialists trained in mastery approaches by the National Centre for Excellence in the Teaching of Mathematics (NCETM). @MrMattock

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