



Observatory for
Mathematical
Education

Key Stage 3 teachers of mathematics

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April 2025

Evidence
Excellence
Equity

Summary

Teachers make a difference for the quality of children's education and their futures, for social mobility, and for society in general. Yet there are longstanding challenges with the recruitment, retention and distribution of teachers of mathematics in England; only 73% of the teacher training target for secondary mathematics was met in 2024.¹ These challenges have a particular impact at Key Stage 3 (KS3), hence the focus for this report.

The number of early career teachers leaving the profession within the first three years remains high,² and some of the most commonly cited reasons for this include workload, pupil behaviour, and the limited opportunities for hybrid working.³ In contrast, experiencing good collaboration and continuous professional development can enhance job satisfaction and teacher retention.⁴

The Observatory for Mathematical Education's Secondary Cohort Study began in 2024-25 and is following around 26,000 pupils over a seven-year period as they progress through a representative sample of 150 state-funded Research Partner Schools across England.⁵ The research instruments in the cohort study generate linked data from teachers, parents, curriculum leaders, and students. These will also be linked to the National Pupil Database for a wider range of analyses.

This report presents analysis of teacher workforce data from a sample of 1030 teachers of mathematics in 141 of these secondary schools. Data was generated through a carefully designed and piloted online survey that was circulated to participating schools in November 2024.

This short report explores a range of key issues in five sections:

1. Who is teaching maths in Key Stage 3?
2. Teacher motivation and enjoyment
3. Teacher agency and departmental culture
4. Teacher workload
5. Teacher professional development

This analysis highlights the five key findings below. Further research using this data will be published in the coming months.

Key findings

- KS3 teachers of mathematics⁶ are less experienced and less well-qualified in mathematics than those who only teach KS4/KS5.
- KS3 maths teachers overwhelmingly enjoy teaching maths and the majority believe that they have sufficient autonomy as teachers.
- Most KS3 maths teachers report that they have sufficient time for teaching the maths curriculum but not for administrative tasks, and almost half of them say they do not have enough time for planning.
- The most common motivations for becoming a maths teacher are to make a contribution to society, job security and the work schedule.
- The most pressing professional development need reported by KS3 maths teachers is on the use of digital technologies.

Introduction

The purpose of this report is to give some early insights of the data generated from the Observatory's longitudinal research study. In future the Observatory team will publish more detailed analysis of this dataset. Further analysis will also link to data on pedagogic practices (from Year 7 teachers) and students' views of their experiences and attitudes. In this way, the team aims to understand the relationships between teacher qualifications and experience, pedagogic practices and beliefs and pupils' attitudes and experience of learning mathematics.

Short summaries in areas of policy interest are presented in this report. Analysis was considered for each question overall, and then in the area relevant to each question with a particular focus on differences by teacher experience and the relative economic disadvantage of schools, as measured by the percentage of pupils eligible for free school meals.

Who is teaching maths in KS3?

Three quarters of those teaching mathematics at KS4/KS5 (but not KS3) in the sample have over 10 years of teaching experience, compared to 49% of those teaching KS3 (see Figure 1). Similarly, only a negligible number of maths teachers not teaching KS3 are in the early stages of their career (< 5 years of experience), compared to 23% of those who do teach KS3 mathematics.

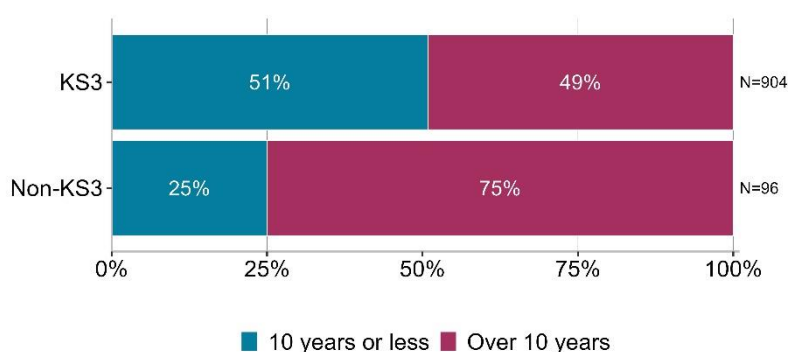


Figure 1 The proportion of KS3 and non-KS3 maths teachers by teaching experience.

In the least disadvantaged schools in the sample,⁷ 62% of KS3 maths teachers are 'experienced' (> 10 years of teaching experience), while in the most disadvantaged schools, this falls to 32%. Similarly, the proportion of 'early career' teachers (i.e. < 5 years of experience) teaching KS3 maths is 15% in the least disadvantaged schools and more than double that (34%) in the most disadvantaged schools. Among secondary maths teachers who do not teach KS3, this pattern persists: 86% in the least disadvantaged schools, and 60% in the most disadvantaged schools, are 'experienced'.

Furthermore, KS3 maths teachers are more likely than non-KS3 maths teachers to only have a school maths qualification: 26% of non-KS3 maths teachers and 45% of KS3 maths teachers do not have a university maths degree (Figure 2).⁸ Sixty-nine percent of university-educated non-KS3 maths teachers have a maths degree, while only 52% of university-educated KS3 maths teachers do (Figure 3).

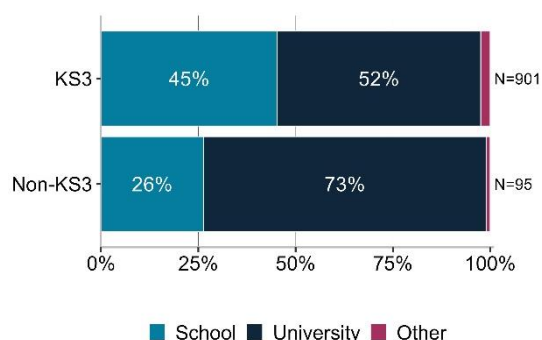


Figure 2 The proportion of KS3 and non-KS3 maths teachers by highest maths qualification.

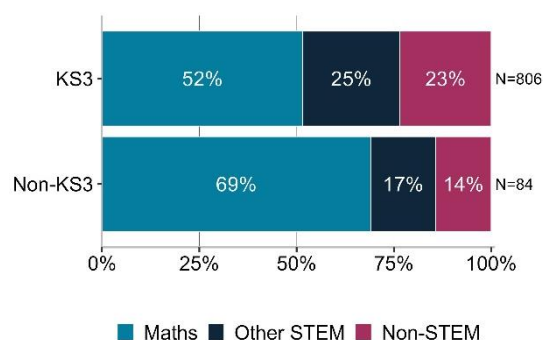


Figure 3 The proportion of KS3 and non-KS3 maths teachers by undergraduate degree field.

Teacher motivation and enjoyment

The most important motivations for becoming a mathematics teacher were as follows: *teaching allowed me to provide a contribution to society* (87% of KS3 maths teachers); *teaching offered a secure job* (84%) and *the teaching schedule (e.g. hours, holidays) fit with responsibilities in my personal life* (68%; Figure 4). This last point is particularly important, and a counterbalance to some of the workload concerns below. These patterns do not vary substantially by school economic disadvantage, teaching experience or undergraduate degree field.

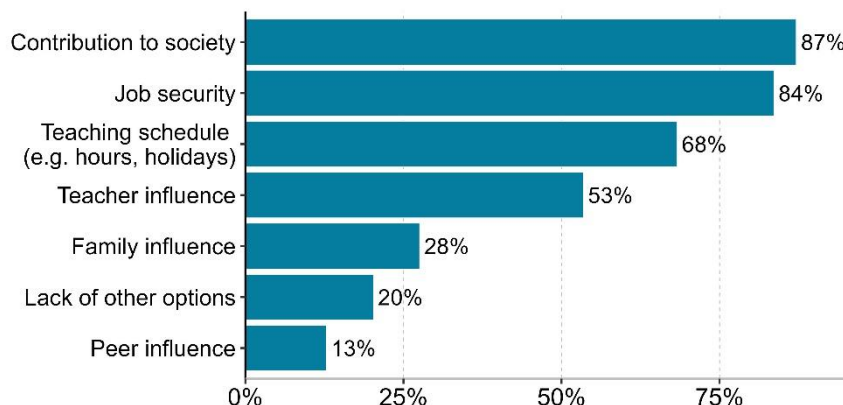


Figure 4 The proportion of KS3 maths teachers who indicated moderate or high importance for various reasons for becoming a teacher (N=903).

Two-thirds of KS3 maths teachers in the sample received an incentive such as a bursary to support their initial teacher training. Interestingly, over 40% of those KS3 maths teachers who received an incentive reported that they would *definitely* have entered teaching without the incentive. This view is more likely to come from experienced maths teachers (56% compared to 26% of early career). This could be related to those maths teachers having different levels of incentive, or it might simply be the case that those remaining in the profession for longer were those less motivated by bursaries. Interestingly, experienced and established maths teachers with non-maths degrees are more likely than those with maths degrees to report that they would not have entered teaching without an incentive such as a bursary (Figure 5).

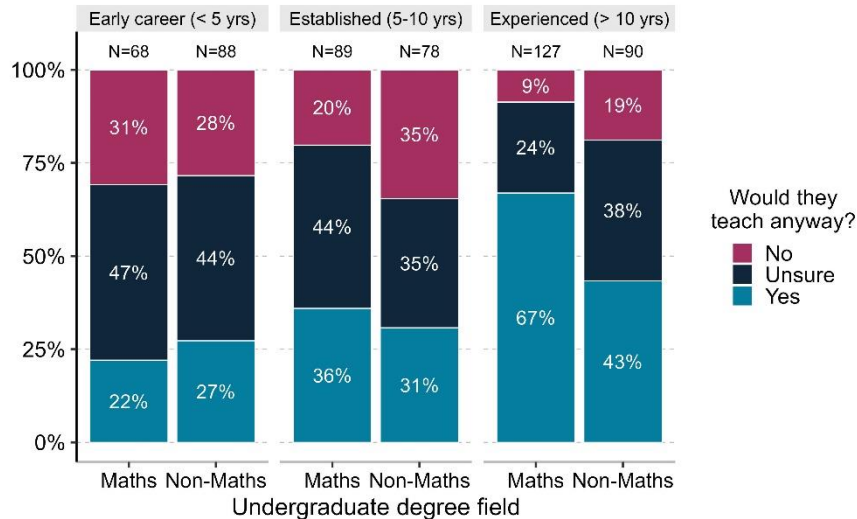


Figure 5 The proportion of KS3 maths teachers who received an incentive to enter teaching who said they would have become a teacher even without the incentive, by their undergraduate degree field and teaching experience.

The vast majority of KS3 maths teachers reported enjoying teaching maths (Figure 6). This might not sound surprising but, given the negative coverage of teaching that sometimes surfaces in the media, it is important to emphasise that nearly all maths teachers enjoy teaching maths. Additionally, the majority of KS3 maths teachers (62%) agree or strongly agree that *the advantages of being a maths teacher clearly outweigh the disadvantages*. Overall, the majority report a positive view of their teaching role. These KS3 maths teachers are more ambivalent about their perceived value in society which is concerning given the crucial role they play in the education system.

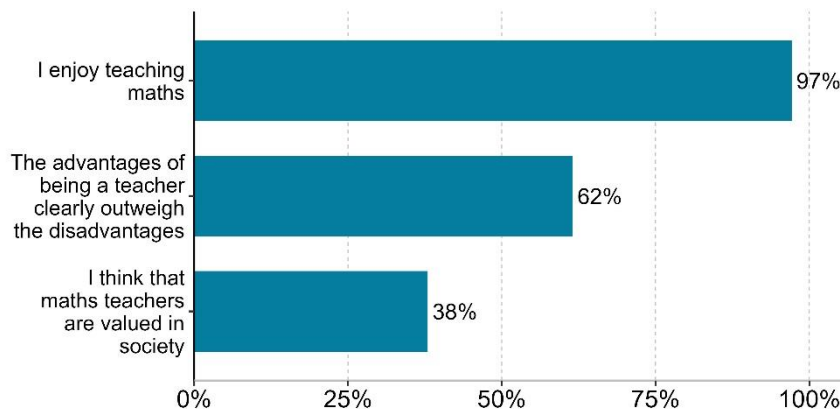


Figure 6 The proportion of KS3 maths teachers who agree or strongly agree with statements about their perception of teaching (N=908).

Enjoyment of teaching maths does not vary much by school economic disadvantage, nor does teachers' agreement with the statement *I think that maths teachers are valued in society*. However, there is some variation in how likely KS3 maths teachers are to agree that *the advantages of being a maths teacher clearly outweigh the disadvantages*. While 66% of teachers in the least disadvantaged schools agree or strongly agree, only 57% of teachers in the most disadvantaged schools do.

Teacher agency and departmental culture

The positive views of maths teachers might be attributed in part to their sense of agency and in part to the culture in mathematics departments. Eighty-seven percent of KS3 maths teachers in the sample agree or strongly agree with the statement *I have autonomy to exercise my professional judgment in my maths teaching*.

Perceptions of autonomy vary by school: 92% of KS3 maths teachers in the least disadvantaged schools agree or strongly agree, while only 81% in the most disadvantaged schools do (Figure 7). Looking only at those KS3 teachers who strongly agree shows a more distinct pattern: 45% of KS3 maths teachers in the least disadvantaged schools strongly agree whereas only 20% of KS3 maths teachers in the most disadvantaged schools do. This might be due to standardised teaching approaches in those schools where, for example, there are higher proportions of teacher vacancies or out-of-field teachers.

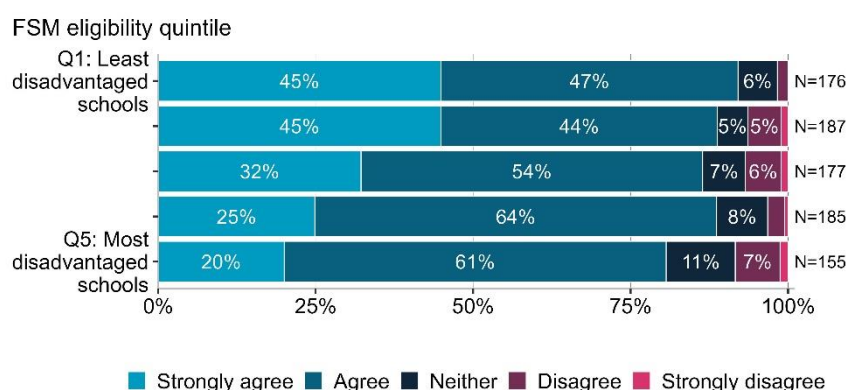


Figure 7 The extent to which KS3 maths teachers agree that they have autonomy to exercise their professional judgment in their maths teaching, by free school meal (FSM) eligibility.

When asked to what extent they agree with the statement *I feel like I have a voice in the maths department*, 86% of KS3 maths teachers said that they agree or strongly agree (Figure 8). Similarly, the majority of KS3 maths teachers agree or strongly agree that *the maths department shares a common set of beliefs about teaching and learning* (85%), and that they *often work together with other teachers to improve maths teaching* (79%).

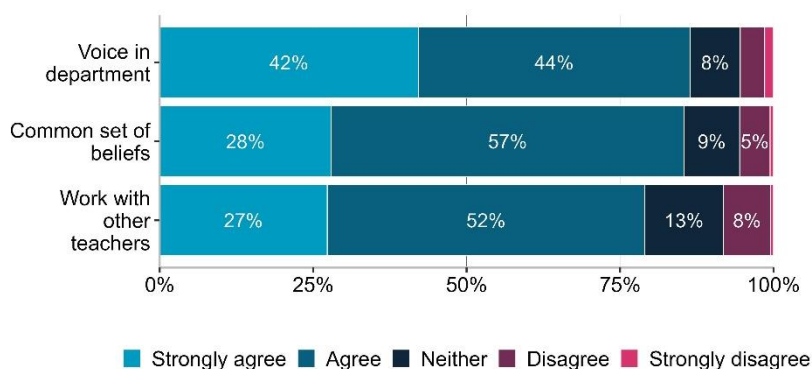


Figure 8 The extent to which KS3 maths teachers agree to various statements about their maths department (N=905).

These views on autonomy do not vary substantially by school economic disadvantage, although there is some variation in the proportion of KS3 maths teachers who strongly agree that they have a voice in the maths department (43% in the least and 39% in the most disadvantaged schools).

The extent to which KS3 maths teachers believe that their department has enough maths teachers varies according to school economic disadvantage (Figure 9). The proportion of KS3 teachers who agree or strongly agree that there are generally enough maths teachers in their department is substantially lower in the most disadvantaged schools (57%) than in the least disadvantaged schools (82%).

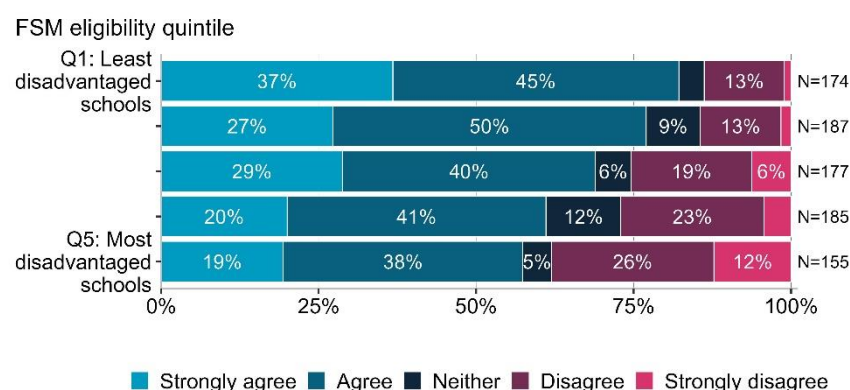


Figure 9 The extent to which KS3 maths teachers agree that there are generally enough maths teachers in their department to deliver the subject, by free school meal (FSM) quintile.

Teacher workload

Workload is one of the most pressing concerns of all teachers. In this sample of KS3 maths teachers, 35% agree or strongly agree that *overall, I have an acceptable workload*; 45% disagree or strongly disagree, and the remaining 20% were neutral. This high-level figure hides several things that are worth exploring. For example, views on workload vary by experience, with the likelihood of agreeing that one's workload is acceptable being lower for those with more than five years' experience (Figure 10). Early career KS3 maths teachers in this sample were slightly more likely to agree than disagree that their workload was acceptable.

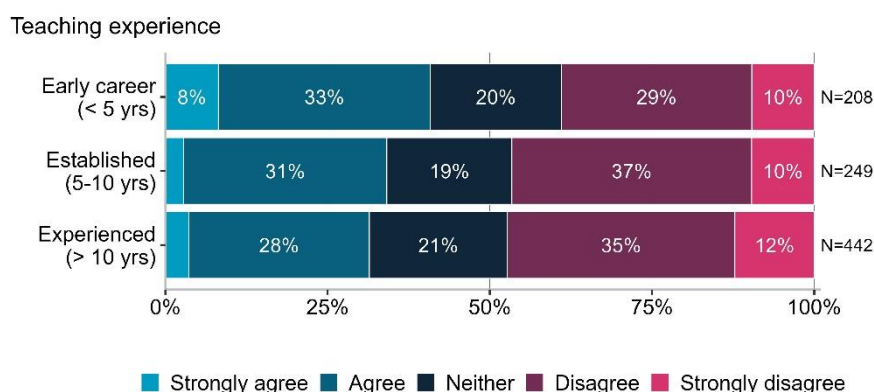


Figure 10 The proportion of KS3 maths teachers who agree/disagree with the statement: 'Overall, I have an acceptable workload', by amount of teaching experience.

One might also consider different aspects of teachers' roles in this high-level notion of workload. KS3 maths teachers are most likely to agree or strongly agree that they have *enough time to teach the maths curriculum* (61%; Figure 11). Just under half (45%) agree or strongly agree that they have *enough time to plan their teaching*, while only a quarter agree or strongly agree that they have *enough time for administrative tasks*.

Perceptions around workload vary somewhat by school economic disadvantage. KS3 maths teachers in the least disadvantaged schools are most likely to agree or strongly agree that they have enough time for administrative tasks, planning, and teaching, but these differences are not pronounced. For example, while 30% of KS3 maths teachers in the least disadvantaged schools agree or strongly agree that they have enough time for administrative tasks, 25% of KS3 maths teachers in the most disadvantaged schools do.

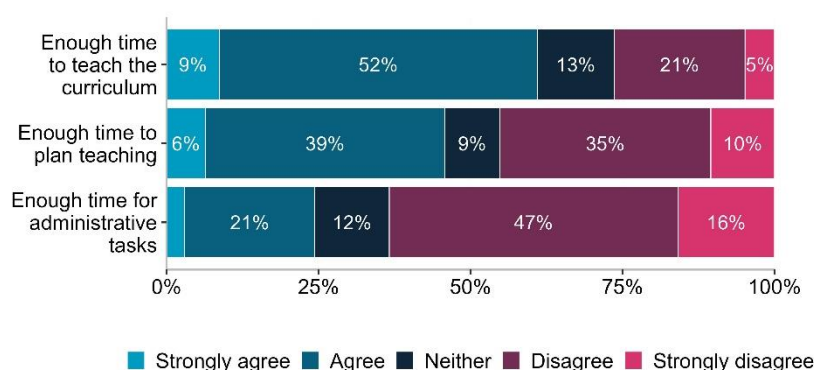


Figure 11 The extent to which KS3 maths teachers agree that they have enough time to perform different aspects of their work (N=907).

Overall, 55% of KS3 maths teachers in the sample agree or strongly agree that they regularly feel stressed from their job. Unlike teachers' assessment of their workload, levels of stress do not vary substantially by teaching experience, ranging from 53% (early career) to 55% (established and experienced) agreement. KS3 maths teachers in the most disadvantaged schools are more likely to agree or strongly agree that they regularly feel stressed from their job (57%) than those in the least disadvantaged schools (46%).

Teacher professional development

The maths teachers in the sample were asked what professional development (PD) they had received in the previous two years, since September 2022. Encouragingly, a high percentage of KS3 maths teachers reported having opportunity to undertake PD, with only 3% saying that they did not undertake any PD. A majority (78%) had undertaken *general pedagogy* PD, and 73%, 66%, 56% respectively had undertaken *maths pedagogy* PD, *maths curriculum* PD and *maths subject knowledge* PD (Figure 12). Conversely, fewer than 40% had undertaken professional development in *use of digital technology in maths*.

Teachers were also asked about their level of need for various areas of professional development on a 4-point scale from 'no need at present' to 'high level of need', where they could identify multiple needs. Overall, 54% of KS3 maths teachers said that they had a moderate or high-level need for professional development in the *use of digital technology in maths*. This stands out as the most pressing need identified in the sample and aligns with recent reports (Figure 13).⁹

KS3 Mathematics Teachers

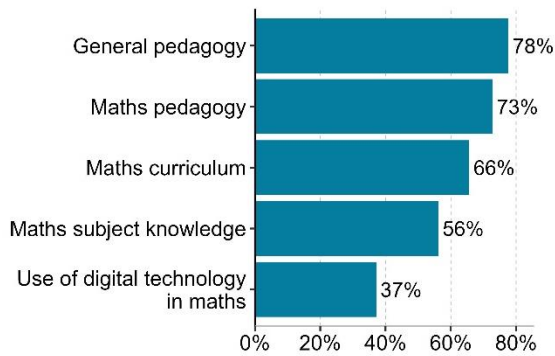


Figure 12 The proportion of KS3 maths teachers who reported undertaking professional development in various areas (N=897).

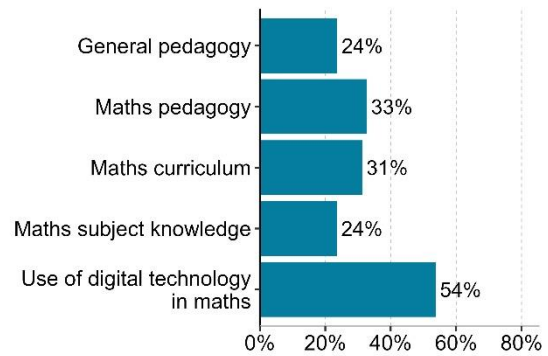


Figure 13 The proportion of KS3 maths teachers indicating moderate or high levels of need for various areas of professional development (N=895).

KS3 maths teachers in the sample were asked to identify the providers of their professional development during the last two years (since September 2022). The vast majority of KS3 maths teachers (90%) said that they received professional development from their school colleagues/leaders and then around a third reported receiving professional development from their multi-academy trust (33%) and Maths Hub (31%).

When asked on level of agreement with the statement *I can access maths professional development when I need it*, 77% of KS3 maths teachers agree or strongly agree. This does not vary substantially by school economic disadvantage, although the share of teachers who *strongly* agree does; while 19% of teachers in the least disadvantaged schools strongly agree, 25% of teachers in the most disadvantaged schools do.

The Observatory for Mathematical Education

The Observatory for Mathematical Education is undertaking an unprecedented ten-year programme of longitudinal research from reception to postgraduate level. This holistic, multi-scale and mixed-method programme aims to better understand our national system of mathematical education and support those trying to improve it. Further details can be found in the Introductory Report on the website.

Acknowledgements

This report was authored by Inga Steinberg, Stephen Lee and Emma Owens, with additional Observatory team members contributing to the survey design, data generation and aspects of the analysis.

Citation details

Observatory for Mathematical Education. (2025). *Key Stage 3 teachers of mathematics*. University of Nottingham.

Endnotes

1. McLean, D & Worth, J. (2025). *Teacher Labour Market in England: Annual Report 2025*. NFER. <https://www.nfer.ac.uk/publications/teacher-labour-market-in-england-annual-report-2025/>
2. House of Commons. (2024). *Teacher recruitment, training and retention*. <https://committees.parliament.uk/publications/44798/documents/222606/default/>
3. MEI. (2024). *Recruiting, developing, and retaining the mathematics teaching workforce in England: An MEI discussion paper*. <https://mei.org.uk/app/uploads/2024/07/Maths-teacher-workforce-discussion-paper-July-2024.pdf>
4. Jerrim, J. (2024). Are satisfied teachers better teachers? International evidence from the TALIS video study. *Teaching and Teacher Education*, 148, 104687. <https://doi.org/10.1016/j.tate.2024.104687>
5. There was some oversampling of selective and single-sex schools, but this only makes a small difference to the results, so we present unweighted results in this report. See the sampling technical report for more details: Sirl, D. (2025). *Cohort Study School Sampling, Technical Report*. Observatory for Mathematical Education, University of Nottingham. <https://nottingham.ac.uk/observatory/documents/reports/schoolsampling-technicalreport.pdf>. The sample of 1030 teachers compares well to the national population of teachers; see [Technical Appendix](#). Further details on the study more broadly can be found in: Observatory for Mathematical Education. (2024). *Introductory report: concepts and plans*. University of Nottingham. <https://www.nottingham.ac.uk/observatory/documents/observatory-intro-report-021224.pdf>
6. Mentions of 'teachers of mathematics' or 'maths teachers' throughout the report refer to all teachers teaching any maths classes, including 'out of field' teachers.
7. Schools are grouped into quintiles based on proportions of students eligible for Free School Meals.
8. In the most disadvantaged schools, 50% of those teaching only GCSE and above have degrees in mathematics; this rises to over 80% in the least disadvantaged schools, though this should be treated with caution due to small sample sizes.
9. Joint Mathematical Council of the UK. (2023). *Mathematics education and digital technology*. <https://www.jmc.org.uk/2023/07/05/mathematics-education-and-digital-technology-a-report-from-a-working-group-of-the-jmc/>; Royal Society. (2024) *A new approach to mathematical and data education*. <https://royalsociety.org/-/media/policy/projects/maths-futures/mathematical-and-data-education-policy-report.pdf>

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