THE ROYAL SOCIETY

A new approach to mathematical and data education: an agenda for change

Summary of the Royal Society Advisory Committee on Mathematics Education 2025 annual conference

The Royal Society held its 2025 conference *A new approach to mathematical and data education: an agenda for change* on Tuesday 8 July. More than 100 delegates, including teachers, unions, MAT leaders, academic mathematicians, charities, policymakers and education researchers discussed key issues in mathematics education policy and how to implement the recommendations of the Royal Society report, *A new approach to mathematical and data education*, published in September 2024.

This note serves as a summary of themes that emerged from the discussions. It is not intended as a verbatim record, and does not represent the views or positions of the Royal Society or participants and organisations who took part.

It is intended that the themes and discussion points will help shape the future work and direction of the committee as it seeks to promote the implementation of the recommendations in the report.

To view the full report and to find out more about the Society's work in this area, scan the QR code or visit:

royalsociety.org/mathematical-futures

Background

The Mathematical Futures Programme was launched in February 2020, overseen by the Royal Society Advisory Committee on Mathematics Education through a specially convened expert Board, chaired by Sir Martin Taylor FRS. It was generously supported through donor funding from industry partners: Arm, GSK and Google, and continuing support from the London Mathematical Society, the Institute of Mathematics and its Applications and the Royal Statistical Society.

The programme considered the phases between the start of compulsory education and entry into higher or further education or employment. It was concerned with the future mathematical needs of young people progressing through education and preparing for diverse futures, ranging from citizens who will require functional numeracy in their lives to those in jobs/professions where mathematical competences will be a core component.

Following extensive stakeholder engagement, the Society published the report, *A new approach to mathematical and data education*, offering recommendations for system reform which will provide a better mathematical education for everyone, from the everyday needs of citizens to the academic mathematicians of the future.

This new approach would equip future citizens with the capabilities, skills, adaptability, and resilience they need to thrive in a world where mathematics and data play increasingly important roles in everyone's lives.

Introduction

The conference was chaired by Professor Jane Clarke FMedSci FRS, Chair of Royal Society Advisory Committee on Mathematics Education. Emphasising the need to bring together a 'cohesive coalition of the willing' to support it, Professor Clarke outlined the Royal Society's vision for the future of mathematical and data education. A reformed education system must meet the needs of a data-rich and digitised world. It must equip students with domain-specific competences, whilst also nurturing the brilliant mathematicians of the future and increasing the standard of general quantitative literacy across the population. The event's purpose was to therefore reiterate the importance of reform, to decide how to deliver change and to consider who should be involved, whilst also balancing short-term priorities with more ambitious, longer-term goals.

During his keynote address Sir Adrian Smith, President of the Royal Society, highlighted how mathematical skills are vital for most areas of work and that "without data literacy we risk alienating millions of people from the national conversation".

Whilst there is growing appreciation of the mounting demand for mathematical and data skills across all sectors of society, he warned that 85% of companies in key sectors of the economy believe demand for these skills outstrips supply, either now or in the future[1]. Despite a 53% growth in the number of job opportunities requiring advanced mathematics skills between 2018 and 2022, 49% of the labour force have a level of numeracy equivalent to that expected of a child leaving primary school[2].

Image: Professor Jane Clarke FMedSci FRS, Chair of Royal Society Advisory Committee on Mathematics Education.

1 PWC, 2022, 'Supporting the Times Education Commission'. See https://www.pwc.co.uk/who-we-are/annual-report/stories/2022/supporting-the-times-education-commission.html (accessed 7 August 2025).

2 UK Government, 2022, 'Numeracy support to boost maths skills for all the family'. See https://www.gov.uk/government/news/numeracy-support-to-boost-maths-skills-for-all-the-family (accessed 7 August 2025).

Image: Sir Adrian Smith PRS giving his keynote address.

Sir Adrian suggested that part of the solution, particularly in the short term, could lie with the development of Core Maths qualifications, but greater access to the qualification is required. Ten years on from its introduction, only around 7% of A level students who are not taking A level maths are taking Core Maths qualifications[3]. Perhaps not surprising, he noted, given that less than a third of state-funded schools and colleges currently offer the subject.

Sir Adrian also underscored the importance of the teaching workforce, as “without them, any chance of successful reform is lost before it has begun” In the 23/24 academic year only 63% of the target number of maths teachers were recruited through initial teacher training[4].

The uproar sparked in early 2025 by proposed cuts to the Advanced Maths Support Programme for teachers reflects how much subject-specific professional development is valued by the profession. “We must have enough teachers for reform to work, and we must guarantee that they have at least 35 hours of subject specific professional development every year”.

We are therefore at what Sir Adrian called “an important moment in time”, starting with the Curriculum and Assessment Review, with the opportunity to make a real difference, “not the kind of tinkering that we’ve always done in the past, but with some kind of bold ambition” as “no part” of our “outdated” education system should be deemed “too difficult to change”. “If we do not start now, our young people will be ill-prepared for the future, and we risk reinforcing existing regional, gender and socio-economic inequalities”.

3 The Royal Society, 2023, ‘Lack of Core Maths provision fails students’. See https://royalsociety.org/news/2023/12/core-maths-provision/ (accessed 9 September 2025).

4 NFER, 2024, ‘Teacher Labour Market in England: Annual Report 2024’. See https://www.nfer.ac.uk/media/hqdglvra/teacher_labour_market_in_england_annual_report_2024.pdf (accessed 9 September 2025).

Curriculum reform

Real-world, relevant mathematics

Participants discussed the need for a fundamental rethink of the mathematics curriculum. Calls were made throughout the day to integrate computational thinking and technology as core elements, and to revise what is taught to reflect real-world, modern applications of maths and data. Dice games and applying statistical thinking to sports, gambling and healthcare were all cited as everyday examples that could bridge the gap between abstract mathematics and life.

Mathematical and data education (MDE) across the curriculum

In addition to updating what is taught in the maths classroom, participants noted that we must recognise the prevalence of mathematics and data within other subjects across the curriculum and support different subject teachers to nurture those quantitative skills. To do this effectively requires construction of a coherent story about maths and data that runs across all subjects, linking together these various elements of mathematical learning. This cross-curricular connectivity and coherence would allow what is learned in the maths classroom to be reinforced through relevant application in other subjects. Adding content to the curriculum in any subject would require something else to be removed. One proposed solution to this issue was the reduction of manual calculations in maths. Another was to limit the current over-reliance on assessment, which results in hours of memorisation and exam technique practice. This time could be repurposed in favour of the real-world quantitative reasoning, data literacy, and critical thinking required to thrive in the data-rich, digital environments in which young people will live and work.

Increasing breadth

These arguments fed into a wider consensus around the need for a broader, more balanced curriculum, especially post-16. A Baccalaureate-style model was repeatedly proposed, with fewer exams, broader subject coverage, and more emphasis on integration and connectivity between disciplines. It was argued that the purpose of university is depth of study, as opposed to school education, which should serve to provide breadth.

Participants highlighted that offering a more engaging, less alienating experience of maths and data through curriculum reform is even more essential if we consider that one in five students are now persistently absent[5], and that mathematics engagement and attainment dramatically drop during the crucial years between ages 11 and 14.

Key suggestions

- Develop a curriculum framework that unifies maths and data education, incorporating computational tools and real-world problem solving.
- Introduce a Baccalaureate-style curriculum post-16.
- Integrate data literacy and statistical thinking across all school subjects.
- Harness cross-curricular connection so that subjects like citizenship can provide context for mathematics.

Image: Panel 1 (from left) Sir Leszek Borysiewicz GBE FMedSci FRS, Rachel Sylvester (The Observer), Sam Sims (National Numeracy) and Lord Jim Knight (STEM Learning).

5 UK Government, 2025, 'Pupil attendance in schools'. See https://explore-education-statistics.service.gov.uk/find-statistics/pupil-attendance-in-schools/2025-week-28 (accessed 6 August 2025).

Assessment at 16

Pathways and examination styles

The UK has some of the highest volumes of formal assessment for 15 – 16 year olds according to the OECD[6]. This has major consequences for student confidence and teaching practice and tends to result in narrowing of the curriculum to focus on test-content. Low pass-rates and high resit-rates reflect a pattern of low engagement which worsens with every subsequent failed assessment.

In contrast with the UK, many countries offer students a choice of mathematics qualifications, often categorised by level of difficulty, subject focus and duration. The British system, however, funnels all students at age 14 – 16 into the same route, which does not suit its broad range of learners.

Proposed solutions to this problem were varied. Some called for an increase in project-based qualifications like the EPQ (Extended Project Qualification), or its pre-16 equivalent 'HPQ' (Higher Project Qualification). Enabling students to participate in, and be assessed on, interdisciplinary research projects, such as investigations into socioeconomic problems, could encourage the cross-curricular and contextualised quantitative thinking our students increasingly require.

Many participants also suggested moving away from high-stakes, norm-referenced assessment to criterion-referenced, formative, and 'stepping-stone' approaches that allow all learners to demonstrate progress without embedding failure for a third of each cohort. Proficiency-based qualifications were praised for rewarding the mastery of specific skills and knowledge rather than time spent learning, which allows individuals to progress at their own pace. Over-reliance on exam preparation and memorisation was widely criticised, as was the inflexibility of existing qualifications, especially A Levels, which resist meaningful reform despite widespread calls for a broader education.

Technology for assessment

There was significant concern about how students' understanding of complex data and computational concepts can be assessed, particularly given current exam restrictions on computer use. Equally, some participants questioned digitised forms of examination adopted by other education systems, because of potential problems around monitoring candidates' use of AI. Nevertheless, participants were concerned British examination methods do not adequately assess digital capabilities and called for assessment reform that incorporates digital tools and computational thinking.

Key suggestions

- Develop qualifications that reflect modern mathematical and data competences.
- Replace norm-referenced exams with criterion-based models that allow students to demonstrate what they know and can do.
- Introduce a wider variety of assessment pathways, including 'stepping-stone' maths and data certification, to allow recognition of progress for all learners.
- Reduce detail and exam load at age 16.

6 OECD, 2024, 'Programme for International Student Assessment (PISA)'. See https://www.oecd.org/en/about/programmes/pisa.html#publications (accessed 7 August 2025).

Role of AI and technology

Research

Discussions around the digitisation of assessment exposed a widespread demand for in-depth research on the use of technology in schools. Existing studies in educational technology were described as limited, as they tend not to "reach the context of the maths classroom". Research consistently provides just one type of evidence as "it stays at the level of the tool".

E-learning and digital curriculum materials are currently common in higher education, but participants highlighted that these materials have often been developed using pedagogies from HE educators' specific disciplines and have not been piloted or tested with children. Participants supported the suggestion that government introduce a national, standardised, open access app store for educators. There was also a general appetite for research into models that could investigate what a national scale intervention would look like.

Use of technological devices

52% of the UK adult population lack the digital skills to be productive in work[7]. The last time that devices were introduced to the mathematics examination was the introduction of the calculator to the mathematics GCSE in 1988[8].

It was felt that the lack of research on the use of devices by educators and learners, and in assessment methods was a major barrier to trust and confidence in this area of reform. It was also suggested that curricula should incorporate digital tools into the learning experience, rather than simply explaining how they operate.

Artificial Intelligence (AI)

Participants noted the potential of large language models to offer support for overworked educators, for instance by helping to personalise teaching and identify gaps in student knowledge. Adaptive learning platforms funded by local authorities were also cited as promising scalable interventions, particularly in primary schools.

Image: Panel 2 (from left) Professor Alison Clark-Wilson (IOE, UCL), Dr Matthew Forshaw (Alan Turing Institute), Tom Button (MEI) and Sir Kevan Collins (DfE).

7 Future.Now, 2024. 'Latest data on Essential Digital Skills reveals skills stagnation'. See https://futuredotnow.uk/latest-data-on-essential-digital-skills-reveals-skills-stagnation/#:~:text=21%20million%20(52%25)%20cannot,the%20gap%20is%20more%20pronounced (accessed 6 August 2025).

8 Mycroft-Smith, Lucy, 2017. 'The calculator in maths curriculum: research and UK policy' research review. See https://my.chartered.college/research-hub/the-calculator-in-maths-curriculum-research-and-uk-policy/ (accessed 8 August 2025).

It was suggested that we must revolutionise the way statistics are taught if we are to appreciate both the potential, and the pitfalls, of large language models used by AI. Understanding how an AI can hallucinate[9] requires an understanding that it is a data-driven model. As a participant summarised, "AI as we understand it is based on machine learning. Machine learning is data driven, therefore this has to be part of the maths curriculum".

Leveraging existing work

There are multiple existing and emerging attempts to undertake AI skills mapping in the working-age population. These attempts to better understand the attitudes and capabilities of adults in the workplace could be applied to, or specialised for, the education sector.

The DSIT-funded *AI Skills for business competency framework*[10] launched by The Alan Turing Institute, for instance, identifies the knowledge, skills, personal aptitudes and behaviours required to exhibit competence within life and work. The framework targets four audiences or "personas": AI Citizens, AI Workers, AI Professionals and AI Leaders. This provides one example of an opportunity to extend useful, existing work into the education sector, for instance by introducing an 'AI Educator' persona.

Another opportunity would be to harness the progress made by The Alliance for Data Science Professionals[11], which seeks to meet the demand for the accreditation of AI skills among adults. It is essential that these opportunities are exploited if we seek to establish an AI workforce that is as diverse as the populations these systems affect.

Key suggestions

- Create a standardised, nationwide, open access platform of tailored "apps" for educators to integrate technology into teaching.
- Invest in contextualised research into the use and impact of technology and AI in teaching and assessment.
- Integrate technology and data skills into the maths curriculum to reflect the realities of an AI-driven world.
- Leverage existing work on AI skills mapping in the UK workforce, and accreditation in the adult learning space, to benefit young learners and to upskill educators.

Image: Panel 3 (from left) Steve Brace (Geographical Association), Lynne McClure (Academy for the Mathematical Sciences), Liz Moorse (Association for Citizenship Teaching) and Dame Alison Peacock (Chartered College of Teaching).

9 AI hallucination happens when a large language model (LLM) confidently produces outputs that are inaccurate.

10 The Alan Turing Institute, 2025. 'AI Skills for Business Competency Framework.' See https://www.turing.ac.uk/skills/collaborate/ai-skills-business-framework (accessed 6 August 2025).

11 Alliance for Data Science Professionals, 2024. See https://alliancefordatascienceprofessionals.com/ (accessed 6 August 2025).

Teachers as ambassadors for mathematical and data education

Conference participants agreed whole-heartedly that teachers are at the heart of any progress – the question asked was how a sustainable pipeline of confident, well-supported teachers can be achieved. It was argued that we need teachers to be the ambassadors for numeracy “in the same way that GPs are ambassadors for vaccines”. All educators must be able to credibly say “maths matters” and mean it, influencing students and parents alike.

Many existing teachers, especially in primary and early secondary, lack confidence in their own numeracy. National Numeracy data shows that out of a sample of 11,000 trainee teachers, 43% had low skills or confidence (or both), and a third used negative words like “terrified”, “sick” or “defeated” to describe how they feel about maths[12]. Subject-specific professional development must address these psychological barriers as much as pedagogical content.

Technology

Participants also highlighted that teacher retention problems are, in part, the result of a failure to upskill mathematics educators in digital and technological subject areas. Delegates called for scaling up CPD and criticised the current reliance on face-to-face, expensive training models. Technology may provide the opportunity to scale professional development, but the limited research and investment in this area has prevented progress.

Key suggestions

- Invest in high-quality teacher education and continuing professional development focused on mathematical and data skills.
- Consider psychology-informed professional development to improve confidence in teaching maths for all teachers.
- Extend Maths Hubs and target deprived regions[13].
- Fund national recruitment incentives to attract more teachers into maths, including early career bonuses and flexible training routes.

Image: Panel 4 (from left) Professor Andy Noyes (Observatory for Mathematical Education), Professor Noel-Ann Bradshaw (University of Greenwich), Hannah Kitchen (OECD) and Charles Clarke.

12 National Numeracy, 2023. ‘Almost half of trainee teachers lack maths confidence or skills, or both’. See https://shorturl.at/yULoi (accessed 6 August 2025).

13 NCETM, 2025. ‘Maths Hubs’. See https://www.ncetm.org.uk/maths-hubs (accessed 6 August 2025).

Early years

Education not childcare

Many who enter the workforce as preschool educators have minimal qualifications in mathematics, while primary school teachers are not required to have higher than a level 2 maths qualification[14]. This is problematic as almost all primary school teachers teach mathematics, and numeracy is developed in the very early stages of child development.

While other countries like Estonia foreground numeracy skills in the early years, children in the British system experience inadequate early learning environments, particularly in shape, space, and play-based number development. Participants called for a culture-change in which we recognise the early years as a critical, formative stage rather than "childcare" before formal study starts.

Participants concluded that the key to this is a broader view of mathematical thinking that includes spatial reasoning. Activities at this fundamental stage that sit " beyond the maths classroom", such as outdoor play, physical activity and construction play, can all incorporate mathematics. The Maths Champions Programme[15] was cited as a successful and trusted example of this which could be funded and scaled up for wider reach.

Gendered attitudes

It was highlighted that gendered attitudes towards mathematics are both tolerated and unintentionally propagated in the early years. Spatial reasoning disproportionately disadvantages young girls as boys are generally more likely to be given opportunities for construction, for instance using LEGO®. The unconscious biases of parents, carers and educators, as well as low confidence in their own personal mathematical ability, can be passed on to young children when they ask for mathematical support in primary school. Participants therefore called for early years education to be gender-sensitive in order to counter the trend of gender inequality in mathematics that we see continuing up to age 18 and beyond.

Attainment gaps

In addition to the persistent gender gap in mathematical attainment at school, participants addressed the government's long-standing failure to address socio-economic disparities in mathematics. From age three to 18, more affluent students consistently outperform their less advantaged peers, with virtually no crossover. The average GCSE grade of white working-class children in England is a 3, while for everyone else it is a 4[16]. For mathematics, that gap is even wider. There is, as one panellist put it, "potential for mathematics to become the new frontier of disadvantage". Delegates called for interventions to be targeted where they are needed most.

Key suggestions

- Fund programmes such as Maths Champions at scale.
- Adopt a broader view of mathematical thinking, embedding numeracy into early education as part of learning through play.
- Make early maths education gender-sensitive by addressing and counteracting gendered biases that impact children's opportunities and confidence. Target interventions to address socio-economic disparities in mathematics.

14 UK Government, 2025. 'Early years qualification requirements and standards'. See https://assets.publishing.service.gov.uk/media/68b07d05fef950b0909c17b1/early-years-qualification-requirements-and-standards.pdf (accessed 12 September 2025).

15 National Day Nurseries Association, 2024. 'Maths champions'. See https://ndna.org.uk/champions-programmes/maths-champions-early-years-maths-training/ (accessed 6 August 2025).

16 BERA, 2025. 'White working-class children's underachievement in England and Northern Ireland: Continuing challenges and implications for policy and practice to close the attainment gap'. See https://www.bera.ac.uk/blog/white-working-class-childrens-underachievement-in-england-and-northern-ireland-continuing-challenges-and-implications-for-policy-and-practice-to-close-the-attainment-gap (accessed 8 August 2025).

Building consensus and collaboration

Representative policy conversations

All stakeholders, (educators, policymakers, industry, parents, and learners) must collaborate and speak with one voice if change is to be achieved. Within mathematics education policy discussions, we must take note of the voices that might not appear as loud but are no less important. Learner voices and parents' perspectives, for instance, were identified as two essential but underrepresented groups.

Cohesive collaboration is the bedrock of the cultural change strategy that is being called for, and policymakers must ensure that their discussions are representative of the diverse range of educators, parents and learners that their decisions will influence. The diversity of participants at the conference (universities, NHS, charities, learned societies, civil servants, unions, MATs) reflected this potential for broad coalition-building.

Parents

Parents are the first and most enduring teachers of children. If we are to change the culture around mathematical education, then it is essential that parents are included in the conversation.

It was suggested that many parents support the kind of rote-learning they experienced at school, which privileged the memorisation of times tables as a measure of mathematical competence. Educating parents on MDE, its meaning and its value, is therefore integral if we are to effect change.

Participants expressed awareness of the fact that the voices of aspirational parents, or in other words, those with expectations that their child will pursue higher education, are the voices that are frequently heard most clearly by policymakers and government. It was also highlighted that we must consider the value of the conversation between parent and teacher, which is more likely to mobilise the parent that sits outside of that aspirational group, than other stakeholders in the sector. Calls were made for a national campaign to promote numeracy which incorporates upskilling parents, recognising the teacher as an important conduit for reaching certain parent demographics, and fostering mathematical confidence in the community as a whole.

University and employer involvement

Changing the culture around mathematics and data education also means building bridges with the workplace. There were calls for undergraduate science or mathematics students to spend time in schools as ambassadors, and for educators and students to engage with workplaces to see how data is used in practice. This could take place via structured school – workplace partnership programmes.

It was also emphasised that we will require outreach if we are to introduce a Baccalaureate-style model, as its reduction in depth can lead to disengagement among the highest performing students. Calls for breadth were therefore matched with the reminder that we must continue to challenge and engage the very brightest mathematicians.

Key suggestions

- Foster ongoing collaboration and communication channels across all sectors involved in maths and data education.
- Actively include student and parent voices in discussions.
- Launch a national campaign to promote numeracy, targeting parents, carers, and educators.
- Support teachers in becoming ambassadors, building confidence to speak positively about maths with students and parents alike.

Implementation challenges

Evolution or revolution?

One panellist argued that "every government policy in the next 10 years risks failure unless we deal with the core problem of a workforce that is incapable of applying mathematical principles". In light of this fact, "the evolutionary approach" seems insufficient.

There are 32,149 schools in the UK and 643,491 full-time teachers[17]. Children's educational timeline lasts for a minimum of 14 years, while political cycles are out of step with the timeline of reform on this scale. Participants acknowledged that achieving political consensus can be a struggle as Ministers are unlikely to remain in post long enough to gain credit for the benefits of what is implemented now, and changing political ideologies can interfere. One proposed solution was the establishment of an independent, government-sponsored task force to plan long-term, evidence-based reforms insulated from political fluctuations.

The "gold standard" status of qualifications like A Levels can also create resistance to innovation. The school system's prioritisation of what is valued by universities results in an unfair hierarchisation of qualifications. This only serves to reinforce the existing sense that the voices of the "aspirational" appear the loudest.

Though appreciation of the need for collaboration and consensus was widely shared, participants were split over whether an "evolutionary" or "revolutionary" approach to reform would be preferable. Some argued that focusing on achievable "quick wins" and incremental change is more realistic than a "silver bullet" approach, while others felt that the scale and severity of mathematical and data skills shortages requires committed, ambitious, widespread and immediate reform of the education system.

Assuming that the argument is won

Participants suggested that for widespread change to be affected, it is essential that MAT and school leaders are convinced of the need for a new approach to MDE. It was highlighted that gathering and disseminating examples of good practice is essential if we are to garner trust and confidence amongst MATs. Communicating the necessity of these reforms to these stakeholders will require careful consideration. As one participant asked, "how can we give people the confidence to succeed rather than telling people that they've failed?"

Proposed solutions included developing a clear roadmap with prioritised actions, leveraging existing networks to implement and disseminate reforms, and seeking funding partnerships including industry support. It is essential, as one panellist put it, that we must "never assume that the argument is won" but rather be continuously engaging and increasing our "community of the willing".

A lot is going well

Participants also cited the fact that this area of reform is not an obvious priority to some stakeholders, particularly as attainment figures do not reflect the severity of the mathematics education crisis. Statistics is the fastest growing GCSE and A Level subject, and the most popular A Level is mathematics. As one panellist asked: "if young people are choosing these subjects and recognising their value, then what is the problem?"

74% of primary school students are reaching the expected standard of mathematics, while 68% are reaching level 4 or above at maths GCSE[18]. Participants indicated that these figures may conjure a picture of mathematical education which, though not positive, is not in crisis. We must be mindful of the fact that such statistics might distract from the reality that a third of students fail at GCSE, that the majority of resits are unsuccessful, and that for a large percentage of those who pass, there is no viable option for continued mathematical study[19]. If we are to successfully achieve a widespread shift in attitudes towards mathematical and data education, then we must be wary of the preconception among some audiences that the system is working "well-enough".

Key suggestions

- Establish long-term, depoliticised reform structures.
- Engage MATs as agents of change by disseminating examples of good practice.
- Combat the "anti-reform" agenda by uniting stakeholders under one organised and cohesive voice.
- Be mindful of the assumption among some audiences that mathematics is working "well-enough".
- Do not assume that "the argument is won" because those already involved in the conversation concur.

17 BESA, 2023. 'Key UK Education Statistics'. See https://www.besa.org.uk/insights/education-statistics/ (accessed 8 August 2025).

18 UK Government, 2024. 'GCSE English and Maths results'. See https://www.ethnicity-facts-figures.service.gov.uk/education-skills-and-training/11-to-16-years-old/a-to-c-in-english-and-maths-gcse-attainment-for-children-aged-14-to-16-key-stage-4/latest/ (accessed 8 August 2025).

19 The Royal Society, 2024. 'Mathematical Futures programme'. See https://royalsociety.org/news-resources/projects/mathematical-futures/ (accessed 12 September 2025).

Acknowledgements

The Royal Society would like to thank all the individuals who spoke on panels at the conference:

Panel discussion 1 Why we need to change the conversation around mathematical education.

Participants
Chair: Lord Jim Knight, Chair, STEM Learning
Sir Leszek Borysiewicz GBE FMedSci FRS, Vice-Chancellor Emeritus, University of Cambridge
Sam Sims, Chief Executive, National Numeracy
Rachel Sylvester, Political Editor, The Observer, and former Chair of the Times Education Commission

Panel discussion 2 Mathematical education in the digital age: integrating computational tools and technology.

Participants
Chair: Sir Kevan Collins, Non-Executive Board Director, DfE and Chair of the Digital, AI and Technology Task and Finish Group
Tom Button, Maths Technology Specialist, MEI
Professor Alison Clark-Wilson, Professorial Research Fellow, IOE, UCL
Dr Matthew Forshaw, Senior Advisor for Skills, Alan Turing Institute

Panel discussion 3 Mathematical and data education beyond the 'maths classroom': implications of MDE across the curriculum (at all stages).

Participants
Chair: Dame Alison Peacock, Chief Executive, Chartered College of Teaching
Steve Brace, Chief Executive, Geographical Association
Lynne McClure, Chair of the Education Workstream, Academy for the Mathematical Sciences
Liz Moorse, Chief Executive, Association for Citizenship Teaching

Panel discussion 4 Maths pathways, assessment and qualifications.

Participants
Chair: Charles Clarke, former Secretary of State for Education
Professor Andy Noyes, Director, Observatory for Mathematical Education
Professor Noel-Ann Bradshaw, Deputy Dean, Faculty of Engineering and Science, University of Greenwich
Hannah Kitchen, Project Lead, Transitions in Upper Secondary Education, Directorate for Education and Skills, OECD

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Participant organisations	
Academy for the Mathematical Sciences	NHS Northeast London
Alan Turing Institute	Northern Star Academies
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Association for Citizenship Teaching	Oak National Academy
Association for Science Education	Oasis Community Learning
Baker Dearing Educational Trust	Observatory for Mathematical Education (University of Nottingham)
BCS, The Chartered Institute of IT	OCR
British Academy	OECD Directorate for Education and Skills
Chartered College of Teaching	Ofqual
City and Guilds	Operational Research Society
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Devon Education	Pearson
E-ACT	Public First, Reach Foundation
Early Childhood Maths Group	Royal Academy of Engineering
Education Endowment Foundation	Royal Meteorological Society
Education Scotland	Royal Society of Biology
Epic Games	Royal Society of Chemistry
Founders4Schools	Royal Statistical Society
Gates Foundation	Sheffield Hallam University
Gatsby Foundation	STEM Learning
Geographical Association	The Charter Schools Educational Trust
Harlow College	The Institute of Mathematics and its Applications
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IOP	The Open University
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NCETM	University of Surrey
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NHS England	