



National College for
Teaching & Leadership

A guide to STEM continuing professional development (CPD) opportunities for teachers

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A guide to STEM CPD opportunities for teachers

Below is a list of some of the professional bodies and subject associations that offer professional development opportunities for teachers across STEM subjects. The content of this document is updated periodically. It is not intended to be an exhaustive guide to available CPD for teachers. The DfE does not endorse subject associations or any associated content or training.

1. STEM learning

STEM learning, previously the National Science Learning Centre, is a national body that provides teachers, technicians and other educators with high quality, subject-specific CPD and support in STEM subjects. STEM learning work to achieve a world-leading education for all young people in science, technology, engineering and mathematics.

STEM learning support teachers of [science](#), [technology](#), [engineering](#) and [mathematics](#) in working towards their vision that all young people, across the UK, should receive a world-leading STEM education. All their activities are grounded in appropriate education and scientific research supported by clear [evidence of impact](#).

STEM learning operate the [National STEM Learning Centre and Network](#); providing support locally, through [Science Learning Partnerships](#) across England, and partners in [Scotland](#), [Wales](#) and [Northern Ireland](#); alongside a range of other [projects supporting STEM education](#).

The National STEM Learning Centre and Network provides schools and colleges with:

- curriculum linked, quality assured [teaching resources](#) - physical and online careers resources to embed in curriculum lessons
- [community groups](#), peer-to-peer support, online professional development and networking opportunities
- [local, high impact subject specific professional development](#) through Science Learning Partnerships in England, and partners in Scotland, Wales and Northern Ireland
[sustained, transformational subject specific professional development](#), including residential experiences at the National STEM Learning Centre

This is made possible by the generous support of the Wellcome Trust, Gatsby Foundation, Department for Education, their partners in [Project ENTHUSE](#) and other funders, including ESERO-UK funded by the European and UK Space Agencies.

Find out more at [STEM learning](#).

2. Institute of Physics (IoP)

The [IOP](#) offers a range of resources and support to teachers. These include:

- physics teacher network (PTN) – source of information about local initiatives and activities
- supporting physics teachers (SPT) - interactive animations and tips to plan teaching approach
- teaching advanced physics – lesson plan ideas and resources
- practical physics – ideas, guidance and tips for student laboratory time
- TalkPhysics – IoP’s online community for teachers of physics
- Physics Education - international journal around teaching physics in schools and colleges
- Classroom Physics – the IoP departmental quarterly newsletter
- Girls in Physics – new ways to address teaching and resources to tackle the problem

Other useful resources available include:

- [stimulating physics project - mentoring and open workshops](#) – a government funded project providing a network of coaches across England
- [Who’s who?](#) - workshops, support and advice from local co-ordinators
- [@TakeOnPhysics](#) – a Twitter feed to share ideas, events and resources
- [Physics.org](#) – an IoP guide to physics on the web

3. Royal Society of Chemistry (RSC)

The [RSC](#) promotes, supports and celebrates chemistry and are the world’s leading chemistry community. Resources and support include:

- [CPD courses for teachers](#) - help chemistry teachers develop their subject knowledge, pedagogical knowledge and confidence
- [learn chemistry](#) – online resources and tools
- [the Learn Chemistry Partnership](#) – first to hear of new lesson resources and support for students and teachers
- [periodic table](#) –an interactive educational resource
- [EiC magazine](#) – featuring classroom demonstrations, CPD, articles, news, etc
- [TalkChemistry](#) – an online network for chemistry teachers
- [18 education co-ordinators](#) – providing support for teachers and trainee teachers

Courses available in the UK are:

- chemistry for non-specialists
- developing expertise in teaching chemistry
- inspiring creative chemistry teaching

4. Association for Science Education (ASE)

The [ASE](#) is the largest subject association in the UK. It is an active professional learning community that has been supporting all those involved in science education from pre-school to higher education for over 100 years; members include teachers, technicians, tutors and advisers. ASE is an independent registered charity appointed by Royal Charter to help improve the teaching of science and provide a voice for science teachers on educational matters.

Journals

The ASE's journals offer invaluable insights into science education. With articles from expert teachers and technicians, each publication has classroom tips, policy updates, suggested resources and shared effective practice.

- [Education in Science](#)
- [School Science Review](#) for teachers of students aged 11-19
- [Primary Science](#) for teachers of students aged 5-11
- [Science Teacher Education](#) for those involved with pre-service education, induction and professional development of science teachers
- [Journal of Emergent Science](#) open-access online research journal focusing on science for young children from birth to 11 years of age

Professional Awards

ASE can award its members formal recognition of their skills and expertise as teachers and technicians. Building from Registered Scientist (RSci) to Chartered Science Teacher (CSciTeach), provides a highly regarded pathway for science teachers committed to their subject knowledge and profession.

- [CSciTeach](#)
- [RSci](#)

CPD Events and Conferences

ASE has a strong community at local, regional and national levels. Their field officers organise local TeachMeets where people can share their favourite classroom ideas. On a slightly larger scale, the ASE regional conferences offer a select programme of CPD sessions, while the annual conference brings together over 2500 educators from across the world to share best practice and learning.

- [ASE TeachMeets](#)
- [ASE annual conference](#)
- [CPD Events](#)

Weekly education chats

#ASEchat is a weekly online science education discussion group conducted via twitter that takes place on Monday evenings from 8.00-9.00pm (UK time). Follow ASE on twitter @theASE and [#ASEchat](#).

5. Royal Society of Biology

The Royal Society of Biology supports its members working at all levels of education by producing education policy statements, responding to consultations and contributing to curriculum development. Through a partnership with other leading science organisations, they aim to increase their influence over the direction of biology education in future years.

The Royal Society of Biology:

- is committed to supporting and encouraging the study of biology at all levels
- supports and recognise excellence in biology teaching
- champions a biology curriculum that challenges students and encourages their passion for biology
- supports young scientists in their studies throughout higher education
- provides careers guidance to students at all levels

Education policy

The Royal Society of Biology believes that the key to maximising the impact of their efforts to support and enhance biological education from school to university lies in a greater degree of collaboration. They are a core member of Science Community Representing Education ([SCORE](#)), which provides a coherent voice for the science community on the long-term issues in science education. Find out more about its [education policy](#) work.

[TalkBiology](#) is an online forum available for teachers, technicians and other educators to interact online, share ideas, resources, questions and thoughts about science education and classroom resources. Access to the forum requires registration but is free to educational professionals.

[RSB - Education](#)

6. Computing at School (CAS)

The [CAS](#) working group aims to promote the teaching of computer science at school. Their goal is to put the excitement back into computing at school.

CAS is a grass roots organisation and a collaborative partner with the British Computer Society (BCS). Membership is open to everyone, and is very broad, including teachers, parents, governors, exam boards, industry, professional societies, and universities.

CAS speaks for the discipline of computing at school level, including further education, and not for any particular interest group. CAS seeks to work at many levels, including:

- directly supporting Information and Communication Technology (ICT) and computing teachers who are excited by computing, by providing them with teaching material, training, local hubs, newsletters and the opportunity to meet with like-minded colleagues
- acting as a subject association for computing teachers
- working at an institutional level, for example by encouraging the developments of GCSEs in computing
- advocacy at national policy level; for example, submitting evidence to the Royal Society study on computing in school

Network of Teaching Excellence in Computer Science (NTECS)

CAS works in collaboration with the BCS academy to co-ordinate and provide training opportunities for both existing teachers and those training for the profession. This initiative is supported by the DfE, Oxford, Cambridge and RSA examinations, Council of Professors and heads of computing, Microsoft and Google. As the government, industry leaders and educators call for more computer science in the school curriculum, there is a need to raise the confidence level of existing ICT computing teachers to embrace computer science, if they are not already doing so.

The DfE has supported the application made by CAS/BCS to continue and expand the NTECS.

There are several ways that schools, teachers, universities and academics can contribute to the Network of Excellence and by doing so, you will be joining a vibrant community of professionals (over 1000 schools, 80 universities and over 100 master teachers) who are committing to support each other.

Since January 2013 the CAS master teachers have reached and supported 6752 teachers, have attended CPD events or had personal support from their master teachers. This shows the scale and breadth of activity that is run under the Network of Excellence banner.

Ways to get involved:

- register your school as part of the network. By doing this your school is saying that computing as a subject is important, it is part of the school development plan and they want to ensure their staff have access to suitable training. Further information can be found [here](#)
- register your school as a lead school. As part of the NoE registration each school is invited to self-designate as a lead school. This means that your school will make time to support colleagues in other schools (at least one)
- apply to be a CAS master teacher. Further information can be found [here](#)

7. The Design and Technology Association (DATA)

[DATA](#) supports and champions design and technology education in schools. DATA run a broad and varied schedule of events throughout the academic year ranging from twilight branch meetings, Health & Safety training, one day courses, workshops, conferences and their flagship summer school.

They offer the following opportunities:

- [D&T Association Summer School](#) - Two day summer school
- Sir I Can't Draw - A hands-on workshop designed for KS3 and GCSE D&T teachers ([Bolton](#) and [North Yorkshire](#))
- Lighting Up – Practical Projects for Key Stage 3 and GCSE ([Bristol](#) and [Essex](#))
- [Electronics and Programming for Key Stage 3 and GCSE](#) - introducing programmable components using a typical project as a starting point
- [Building Systems and Simple Control at Key Stage 3 and GCSE](#) – covers programmable components, systems and control
- [Health and Safety 'Train the Trainers'](#) - a series of courses covering step by step processes on a specific subject for Registered D&T Health and Safety Consultants (RDTHSCs) to attend
- [Using the BBC micro:bit in D&T](#) - introductory courses on using the BBC micro:bit in science and D&T. These courses can be booked through [STEM learning](#).
- Effective D&T Subject Leadership in Secondary Schools - for subject leaders and aspiring subject leaders ([London](#), [Liverpool](#), [Plymouth](#) and [West Midlands](#))
- Teaching the new D&T GCSE - A series of five regional, one day courses to support the teaching of the new D&T GCSEs ([London](#), [Liverpool](#), [Bristol](#), [Suffolk](#) and [Nottingham](#))
- RDTHSC Conferences - Three regional H&S conferences ([Bristol](#), [London](#) and [Bolton](#))
- [primary CPD sessions](#) and [secondary courses](#)

DATA's comprehensive schedule of events runs throughout 2016. Please go to the [training and events](#) section of the website to book online, find out full details, venues and presenter information for each course. Alternatively, email: events@data.org.uk or call 01789 470007.

8. National Centre for Excellence in the Teaching of Mathematics (NCETM)

The aims of the [NCETM](#) are to raise levels of achievement in mathematics, and to increase appreciation of its power and wonder, across the school, sixth form college and further education system.

Activities

Collaborating with the government and its agencies, higher education institutions, research bodies, mathematics subject associations and other bodies devoted to mathematics education, NCETM operate in three main ways:

- through their website, where individual teachers, however experienced, can check and refine their subject knowledge and pedagogy, access a vast archive of classroom-based research, and exchange views and experience with colleagues around the country
- through their support for all schools, colleges, organisations and individuals with a professional development role as providers of CPD for teachers of mathematics in all settings, and in providing a framework for quality assurance of that provision
- by identifying aspects of mathematics teaching where additional CPD support is needed, and trialling new programmes to address these needs, which may then be disseminated more widely

All their work is underpinned by the knowledge, supported by widespread research that effective mathematics teaching is based on:

- strong subject knowledge
- an understanding of how pupils learn mathematics
- the skills and confidence to use this knowledge effectively in the classroom

Maths hubs

The structure of support for mathematics education in England is changing. Thirty-two new maths hubs have been established across England, each led by an outstanding school, college or pair of institutions, with a record of excellent achievement in mathematics. They are in partnership with neighbouring schools, colleges, universities, maths experts and employers. This new initiative is designed to build on the excellent practice and achievement that already exists widely - but not universally - across the school and college system. It is being funded by the DfE and co-ordinated by the NCETM. The maths hubs will provide the strategic local leadership to ensure all schools receive the tailored maths education support they need. It is a new way of harnessing all mathematics teaching expertise within an area, to spread excellent practice even more widely, for the benefit of all pupils and students.

Lead institutions: [NCETM maths hub link](#)

9. Institute of Mathematics and its Applications (IMA)

The [IMA](#) is the UK's learned and professional society and exists to support the advancement of mathematical knowledge and its applications and to promote and enhance mathematical culture in the UK and elsewhere. Blogs, book reviews, discussions and much more can be found [here](#).

10. Mathematics in Education and Industry (MEI)

MEI is committed to improving mathematics education and promotes teaching and learning through different strands of activity.

MEI support teachers through a range of professional development opportunities, including their annual conference. Innovative resources are continually being developed to extend and enrich knowledge of mathematics, whether teacher, student, undergraduate or member of the workforce.

MEI takes various opportunities to share and discuss the changing landscape of mathematics education, including consultation, discussions, social media, and their newsletters. Another way you can get involved is through their [membership scheme](#). MEI's local branches for members and educational associates provide professional development as well as a forum for discussion.

MEI is an independent charity; any income generated through their work is used to support mathematics education. MEI is a partner in the [NCETM consortium](#), with responsibility for the secondary mathematics strand and also manages the government-funded [further mathematics support programme](#).

MEI have a membership structure that encourages their stakeholders to engage with MEI in a variety of ways, including sharing news and views, consultation at a national level, curriculum development and CPD. Schools and colleges can apply to become MEI educational associates free of charge, while individuals can apply to become MEI members for a small annual fee. MEI's branches, run by practising teachers round the country, provide professional development as well as a forum for discussion for members and educational associates within their local area.

Educational associates

MEI would like to register all schools, colleges and universities that subscribe to Integral as MEI educational associates free of charge. Schools, colleges and universities may also register as educational associates without subscribing to Integral.

Benefits to educational associates

These include the opportunity to contribute to MEI's work, including consultation on MEI position papers, national issues relating to mathematics education, invitation to [MEI branch meetings, the quarterly MEI newsletter and MEI monthly mathematics](#) by email. It is free to register as an MEI educational associate. To register, complete the [educational associate application form](#).

11. London Mathematical Society – Teacher CPD grants

Application for a [grant](#) under this scheme must be made by a teacher of mathematics or initial teacher education provider based in the UK.

The grants are open to teachers of mathematics from primary schools to A-Level or equivalent (inclusive of sustainable technology education project and Association for Energy Affordability). The grants are to support teacher attendance at specific one or two day conferences/events organised by professional mathematical organisations.

This includes a contribution to the costs of registration for the course and a proportion of the travel and subsistence expenses of attendees. The grants are also to assist providers of professional development to run conferences and courses that allow participants to further their professional development. The grants can also cover the costs of external trainers in schools/educational institutions.

12. The Mathematical Association (MA)

The MA is an educational charity focused on supporting the development of mathematics and mathematics education. The heart of the MA is to be found in its members, committees and subcommittees, and it's CPD which allows great opportunities for interested teachers to work together, - often resulting in publications, resources or discussion documents for the wider community.

The MA is an accredited NCETM mathematics CPD provider and run one-day, or twilight events, around the country including their branches events. Some of these attract hundreds of teachers. A list of their forthcoming opportunities can be found [here](#) which also gives a sample of previous events. The MA also supports teachers in applying for the coveted [CMathTeach status](#).

The MA's lively [annual 3-day conference](#) consists of plenary as well as optional parallel sessions covering primary, secondary, tertiary and general interest mathematics. Presenters are well-known names in mathematical education in addition to others who have something of interest to share. The MA are a partner with the Association of Teachers of Mathematics (ATM) and the Joint Mathematical Council (JMC) in organising the British Congress of Mathematics Education, a four-day event attended by over 400 people which next takes place in 2018.

Through their teaching committee The MA replies to consultation documents and contributes to various debates in mathematics education (see [Mathematical Association link](#)). Their [Twitter account](#) is a popular forum for learning about what is happening 'on the ground': and they have close and active links with the maths hubs.

This range of opportunities provides teachers with a varied and grounded professional development experiences that take them beyond local or short-term issues, developing them professionally in a vibrant and stimulating subject-based community. Join [The MA](#) on- line.

13. National numeracy

[National numeracy](#) is an independent charity founded in 2012. They offer professional development support for teachers and SLTs to build [‘mathematical resilience’](#) among staff and pupils.

There is a growing body of evidence to suggest that a focus on ‘non-cognitive’ or so-called ‘soft’ skills has the potential to enable all pupils to succeed in maths, other subjects and most importantly in life.

National Numeracy can provide bespoke support built around [Value, Mindset and Effort](#).

Please call 01273 915044, email enquiries@nationalnumeracy.org.uk to discuss.

14. The Royal Statistical Society (RSS)

RSS is one of the world’s leading organisations to promote the importance of statistics and data, and are a professional body for all statisticians and data analysts.

Their [free e-teacher membership](#) gives priority access to RSS resources for teachers, including the Guy Lecture for schools and careers promotion materials. All e-teacher members receive the fortnightly StatsLife email bulletin, offering an easy to read digest of statistical news and opinion, and access to the accompanying website, featuring statistics news and updates at the [Royal Statistical Society](#). [Significance magazine](#) has articles and features aiming to communicate the practical use of statistics in an entertaining and thought-provoking way, offering examples of statistical thinking and practice that can inspire classroom teaching. Significance is available free to e-teacher members through the iOS and Android apps, with a discounted print subscription rate.

15. Association of Teachers of Mathematics (ATM)

CPD opportunities

ATM offers professional development through:

- the annual Easter conference
- regional one-day conferences
- local branches
- working and standing groups

Easter conference

The ATM Easter conference provides opportunities for delegates involved with mathematics education at any age to:

- share in successful practices

- develop their mathematics
- tap into recent pedagogical and curriculum research
- learn about international developments and practice
- evaluate recently produced resources
- find out about and experience the most recent ICT developments
- join new research networks and projects
- learn about the most recent developments in mathematics education
- make new and renew contacts with mathematics educators
- have fun
- leave the conference re-energised and full of ideas

Regional one day conference

Occasionally there are ad-hoc one day conferences. These will be advertised on the website and via e-mail. If you are interested in hosting a one-day conference please contact the [CPD group](#).

Local branches, and standing and working groups

There are ATM branches throughout the country which provide excellent CPD through their regular branch meeting. For details go to [the branches page](#).

There are also a number of working groups which provide the opportunity to work with others in a focused manner on one particular aspect of mathematics education. The joint ATM/MA primary standing group is a thriving community of practitioners concerned with all aspects of primary mathematics education. It meets termly and reports to ATM and the MA.

16. British Society for Research into Learning Mathematics (BSRLM)

BSRLM is a national organisation for people interested in research in mathematics education. It is a major forum for sharing research in mathematics education in the United Kingdom. It provides a supportive environment for new and experienced researchers and teacher-researchers to develop their ideas.

BSRLM organises three day-conferences each year and a new researcher's day. These days are open to anyone to attend and they provide unique opportunities for professional learning. Attendance at the day conferences requires you to become a member of BSRLM. Members take advantage of a supportive atmosphere to present reports of work-in-progress, recently completed studies, or more speculative thinking. Informal proceedings, comprising short papers from meetings, are published online. BSRLM also organises practitioner-research events in collaboration with the British Educational Research Association (BERA).

Details of future day conferences, past proceedings, how to become a member and other events can all be found [here](#) and follow updates on Twitter @BSRLM_maths.



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