

secondary and post-16 **stem** LEARNING

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The new design and technology GCSEs

Get prepared for the changes,
challenges and opportunities ahead



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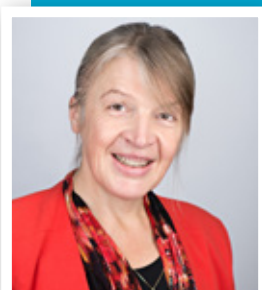
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Our work is made possible by the generous support of the Wellcome Trust, Gatsby Charitable Foundation, the Government, our partners in Project ENTHUSE and other funders of related STEM projects.

Welcome

Welcome to the summer 2017 STEM Learning magazine.



This edition we've got some excellent articles to help you plan for the next academic year, and build strategies to support every member of your teaching community. Head to page four to find out how to be better in the classroom by getting out of it; there are some handy tips for how to use labour market information to inspire your students on page six; and page 14 shows you how to strategically use CPD.

The best part of my role is meeting and working with such a huge variety of individuals and organisations, all united in wanting to give young people the best possible start in life through STEM. Teachers, technicians, school or college leaders, employers, STEM Ambassadors, researchers doing some of the most incredible science, engineering or technology – I could go on. Whether it's meeting one of our 30,000 STEM Ambassadors, or on a recent trip to CERN with the 2016 STEM Inspiration award winners, I'm always learning something new, and being challenged to think differently. Clearly the future is collaboration, and STEM is the ultimate in creativity and collaboration. Scientists, engineers, technologists and mathematicians – as teachers or working in a huge variety of industries – all work increasingly in multi-disciplinary teams, drawing on others' knowledge, skills and ideas to achieve results.

I was delighted to see another organisation committed to supporting teachers, the Chartered College of Teachers, recognised with a Royal Charter last year. Run by their members, for their members, the Chartered College of Teachers aims to promote the professionalism of teaching.

Collaboration is the future - we can find inspiration from each other and from individuals, employers and other organisations supporting education across the UK. So this term, why not challenge yourself to reach out and connect? Come and learn with our experts on bursary-supported CPD at our Centre in York; connect with your local Science Learning Partnership; invite a STEM Ambassador into your school or college; or work with an employer or university through our STEM Insight programme. You might be surprised about the impact this could have on you, your colleagues - and most importantly - your students.

Yvonne Baker

YVONNE BAKER, CHIEF EXECUTIVE, STEM LEARNING

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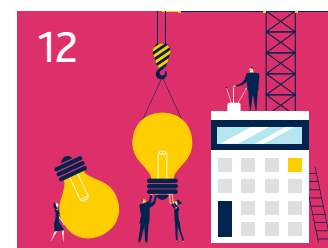
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Get out of the classroom to be better in the classroom

by **WAYNE JARVIS** Regional Network Lead, National STEM Learning Network

Students thrive when they have real-life contexts to link to the curriculum. Not only does it engage and excite them, it also gives them a deeper understanding of what they are learning and how it is applied in daily life. Just as learning outside the classroom provides some of the most memorable learning experiences for students, the same is also true for teachers.

Who would think that a greenhouse in the dark Icelandic winter months, with a climate that doesn't get much warmer than 15°C, could be yielding a ton of tomatoes every day? Yet this is exactly what the geothermally heated greenhouse at Fridheimar farm in Selfoss, Iceland, does. Using geothermal groundwater to heat the greenhouse, cheap geothermally-generated electricity and a few boxes of imported bumblebees, this greenhouse generates mini-ecosystems which are all controlled at the touch of an iPad!

This one example really brought STEM subjects to life for teacher Sophie Reynolds from Brooke Weston Academy in Corby, who was part of a Research Councils UK study visit to Iceland last year. "I absolutely loved the tomato greenhouse; it was an amazing example of intensive farming and diversification... The visit has given me so much that I can use when teaching limiting factors in photosynthesis and will undoubtedly allow students to see real-life contexts to issues that we are dealing with theoretically."

As part of this visit to Iceland teachers visited Saevar Helgi Bragason, the Outreach Officer for Astronomy at the University of Iceland. He leads stargazing and aurora evenings at his purpose-built observatory in the south of Iceland. The observatory has telescopes mounted on plinths and the roof slides back from above, revealing the stars and aurora (if the weather is playing ball).



Dave Spafford, a physics teacher from Kesteven and Sleaford High School Selective Academy, has used this experience to bring his astronomy curriculum to life for his students: "I never had any real interest in astronomy despite being a physics teacher. However, having listened to the presentation I was really inspired to learn more! ... some students and I have observed Mars, Venus and Uranus all in the same part of the sky and both students and staff have been amazed that they have seen planets (when they first thought they were just bright stars) and they have really become inspired! It has been a revelation."

Of course you don't need to go so far away from home to think about the real-life context you could experience, to help bring to life topics in the classroom. The list of opportunities to develop your own continuous professional development (CPD) and experiences in the real world are endless. You could go to local museums or national ones and sometimes as a group of teachers you can get behind the scenes tours and get in-depth examples of the research they do. Zoos and wildlife areas can be good places to learn about ecology and conservation in practice; take pictures of practices to use in lessons.



Keep an eye out for university open days, residents' weekends, industrial visits, science centres and even archeological digs, for examples of how STEM is used in the real world in a multitude of ways. These are often events we would attend anyway that can really enhance our own learning and the students' as well.

It isn't only study visits, whether here or abroad, that are beneficial to teachers. Subject-specific CPD offers time out to think about your teaching and network with others who are in the same position as you. Amandeep Phull attended New and aspiring leaders of mathematics in 2016 and found the networking element invaluable: "It's nice to know there are people outside of your own school and meet people who work in your subject". Angela Ellis attended Raising attainment in science organised by her local Science Learning Partnership and found: "...valuable space and a forum for considering priorities and approaches to raising the profile and ultimately the attainment in science in my school."



One of the main advantages of getting out of the classroom and getting immersed in real-life applications of STEM subjects is the eye-opening nature of the experience. It is easy to be blinkered to the amazing world that surrounds us. By taking time out and sharing experiences with other teachers, the passion for our subjects is re-ignited, which in turn is reflected in our teaching, and ultimately in the engagement of our students. These are just a few of the great advantages of bringing real life into your teaching, so get inspired and get out of the classroom to be better inside in the classroom.

GREAT CPD OUTSIDE OF THE CLASSROOM >

Try a placement in an industry or university setting
■ www.stem.org.uk/ms/stem-insight

Discover CERN with other teachers
■ www.stem.org.uk/nv200

Explore Iceland with our unique study visit
■ www.stem.org.uk/rp463

Bring Cutting Edge Research into the classroom with RCUK
■ www.stem.org.uk/ms/research-councils-uk

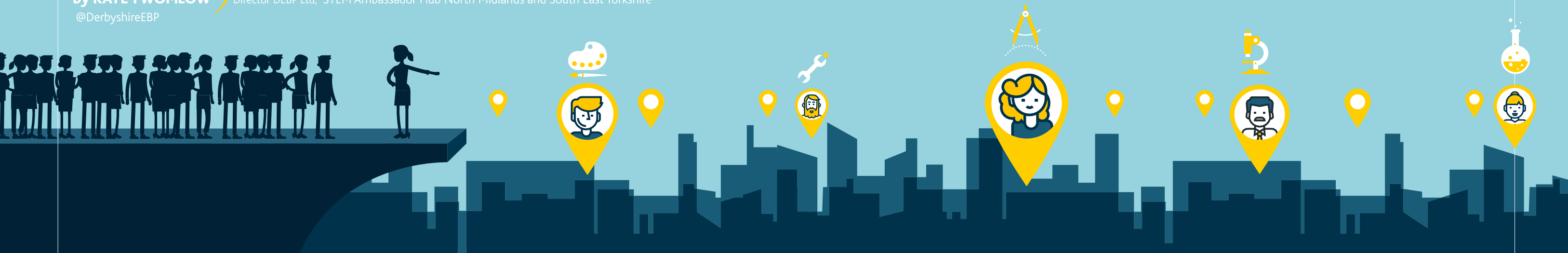
Telling the story...

by **KAYE TWOMLOW**

@DerbyshireEBP

Director DEBP Ltd, STEM Ambassador Hub North Midlands and South East Yorkshire

Using labour market information to show the importance of STEM study



At the key decision points in a young person's school life – GCSE options, post-16 or post-18 choices – we all want to empower students to understand the opportunities available to them.

Have you considered that using labour market information (LMI) could be part of the answer? We know how important the STEM sector is to England's growth, but how does this translate to real and tangible options for young people in your school or college?

GIVING STEM SUBJECTS A CONTEXT

Local LMI, with its compilation of detailed statistical data on jobs and salaries, employers, sectors, employment conditions and future trends, might seem like a dry and uninspiring set of data that your students won't be interested in. However, used in the right way, you can help your students to understand their local area, putting into context what is on offer if they pursue STEM subjects and careers. Here we find out what three schools have done to make it relevant for their young people.

Derbyshire's John Flamsteed Community School wanted to improve the profile of their science department and develop their enrichment programme. They looked at the local LMI and local companies and have developed relationships with STEM Ambassadors who come in to talk about science related industries in the area. They have also created displays based on local area priorities.

Belper School used the local priority sectors to help it find STEM Ambassadors for a careers day they planned. A key speaker

was engaged from each of the sectors to do a short pitch before students were asked to apply for linked jobs and have mock interviews. The impact on this was that every student in year 10 was aware of the priority sectors locally, they understood the type of jobs available and got to make an informed choice for their mock interview. The sector representatives were so impressed that they are still working with some of those young people and holiday jobs have been offered.

Chris Wright, Eckington School's Leader of Student Development for the Sixth Form, wanted to highlight employers' needs, in particular in STEM, to the senior leadership team and the Governors. He used information from his Local Economic Partnership (LEP) about the Sheffield City Region to put together a robust presentation. "All being well, we will be looking to promote a major growth in our vocational provision in the coming years which, potentially, is very exciting," he said.



WHERE CAN YOU FIND THE DATA?

The ideal place for us to start is in the area of prediction for private business and there are many sources of this useful data.

1. LOCAL ECONOMIC PARTNERSHIPS

The Government distributes funding in England through 39 LEPs. These LEPs investigate their region, understand the economy and support its development. Most write a ten-year strategic plan that identifies the business sectors that will contribute most to the economy.

LEPs tell us a little bit about what's important here and now, where the investment in businesses is going to be spent and gives a fair idea of direction of travel – and they have some interesting infographics ripe for a school presentation. (Some better than others!)

2. PROFESSIONAL INSTITUTIONS

Professional institutions are made up of member companies and employees involved in that sector, each of which will have their own information to share with young people and teachers.

In the STEM world, the organisation that pulls many of these institutions together is Engineering UK. Each year Engineering UK put a publication together with incredibly useful summary infographics. It talks about the state

of the engineering sector, its predicted needs and value to the economy. A really useful guide and shouldn't be missed!

3. NOMIS

NOMIS is the Government's official labour market statistics website run by the Office for National Statistics (ONS). It needs a bit of interpretation, but this site will show you skills levels and employee jobs by industry if you just put in your postcode.

Although this data is collected as recently as possible, and some is updated monthly, some of it might be a couple of years old, and some census data was collected as far back as 2011. The value however, is that it allows you to put numbers to the people working in the different sectors and compares them to the regional and national figures.

TOP TIPS FOR BRINGING LMI TO LIFE FOR YOUR STUDENTS

- LEPs give you lots of evidence about your local area and its priorities
- use in presentations at options events and for parents, governors and leadership
- display the infographics from the publications in classrooms to get young people thinking about their future
- NOMIS allows you to put employee numbers to a sector, giving you those valuable statistics for an area of your choice
- STEM Ambassadors bring it to life!

There is a wealth of information out there, which takes a bit of digging to put together, but is well worth it to support young people in making the right choice for them. Good luck!

FIND OUT MORE ABOUT LABOUR MARKET INFORMATION >

Request a STEM Ambassador

■ www.stem.org.uk/ms/stem-ambassadors

Check out your local LEP

■ www.lepnetwork.net/about-leps/

STEM careers toolkit

■ www.stem.org.uk/ms/careers-toolkit

Careers in STEM

■ www.stem.org.uk/rp226

Data logging – come on there's nothing to be afraid of!

by **HELEN ROSE** Technician Professional Development Leader, National STEM Learning Network

I have used data loggers for a great many years now. It started when the science department I worked in had an OFSTED inspection and received a 'Good' grade instead of an 'Excellent'. This of course didn't go down too well. The head of science put a business case to the governors to fund the data loggers and sensors. With new equipment we took on the task of learning the software, the hardware and how we could use it in our scheme of work.

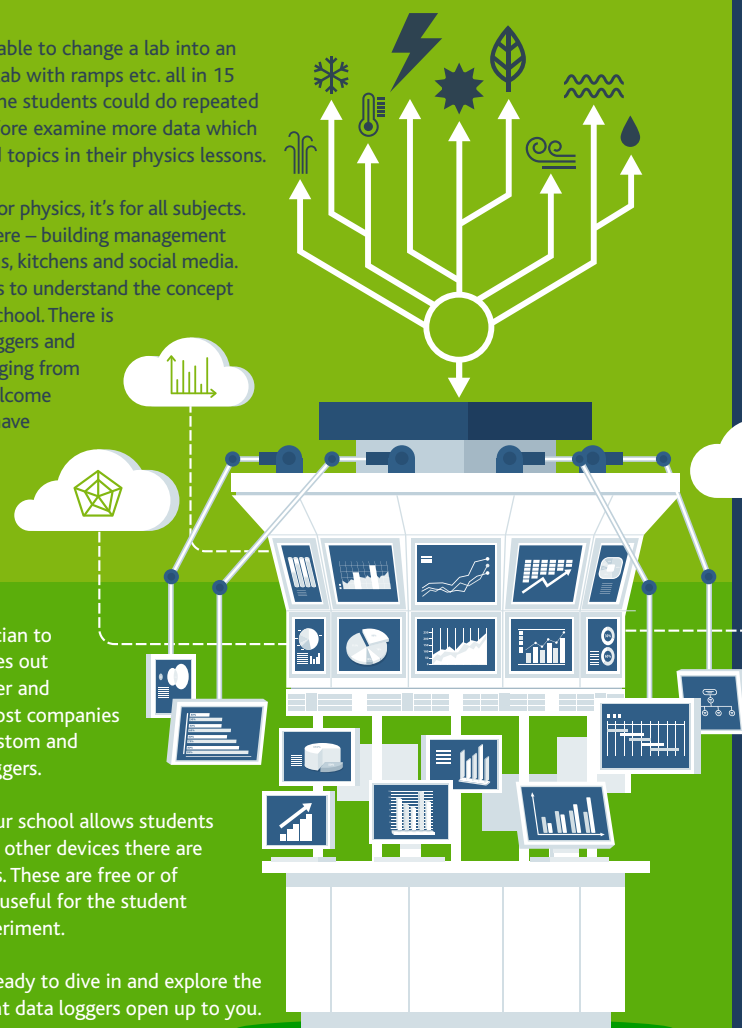
After this training I was able to change a lab into an eight station light-gate lab with ramps etc. all in 15 minutes, phew! Result: the students could do repeated logging and could therefore examine more data which helped them understand topics in their physics lessons.

Data logging is not just for physics, it's for all subjects. Data capture is everywhere – building management systems, weather stations, kitchens and social media. So let's get your students to understand the concept of data logging in your school. There is a whole heap of great loggers and sensors to do it with, ranging from the micro:bit in your Wellcome Crunch Box (which you have somewhere in your school!), to wireless sensors which link to your mobile device.

Ask your science technician to contact all the companies out there to get obtain logger and sensor specifications. Most companies are eager to get your custom and will demonstrate the loggers.

Do remember that if your school allows students to use mobile phones or other devices there are lots of data logging apps. These are free or of very little cost and very useful for the student when writing up an experiment.

So get excited and get ready to dive in and explore the world of possibilities that data loggers open up to you.



EMBRACE IT, IT WON'T BITE!

Ok so now you're keen to rediscover data logging, how do you discover the best hardware for your school? Here are some of the questions I get asked most often:

SHOULD I GET STANDALONE LOGGERS SO I DON'T NEED LAPTOPS TO USE THEM?

Definitely go for standalone data loggers as long as you can plug a memory stick in and they have the option of transferring data to another device.

HOW MANY AND WHAT KIND OF SENSORS DO I NEED?

As many as possible with regard to the data loggers. For the sensors, this depends on what you are going to do – temperature, forces, light gates, pH meters, the list goes on... Figure out what you want to use your loggers for and go from there.

HOW MUCH CAPITATION DO I HAVE?

How long is a piece of string? This depends on which make of data logger and whether you will get a discount.

WOULD ANOTHER DEPARTMENT PUT INTO THE POT TO BUY THIS EQUIPMENT?

Hopefully. Geography could use the loggers and sensors for field work, music with sound sensors, mathematics with SUVAT equations and the PE department using force and spirometers to show the efficiency of an athlete. Talk to other departments and show them all the things they could use data loggers for, then they'll be more likely to help out with funds.

Gain a unique insight

by **LEWIS HUTCHINSON** Science Teacher and STEM Co-ordinator, UTC Reading

Lewis Hutchinson tells us about his experience with Syngenta, a world-leading agrochemical business, on our STEM Insight programme. STEM Insight takes teachers and technicians out of school or college and immerses them in STEM industry or university to improve students' STEM-related careers awareness.

I'm a science teacher and the school STEM Co-ordinator responsible for the promotion of STEM careers. I teach GCSE Science and A level Physics at University Technical College Reading.

Why did you want to participate in STEM Insight?

I wanted to work in the professional scientific community and make sure that I'm up to speed with the current practices behind scientific research and development. I wanted to build a lasting relationship with Syngenta to develop joint ventures between us, such as work experience, lectures, co-teaching and inviting the industry partner into school to work with our students.

What were the most valuable moments of your experience with Syngenta?

Seeing how science is conducted in a working environment with a leader in their field of expertise. It was fascinating to see professional scientists going about their daily work and being able to relate it to content delivered in class. I gained significant insight into life as a modern scientist and the skills they require.

How has this experience impacted your teaching?

I gained a unique insight into the operation of a large global STEM company and the range of possible career options open to my students. This will help me to enthuse students towards a STEM-related career by showing them examples of possible job roles available. I can talk about how science is performed in industry during my lessons and can give specific examples. During lessons I have explored the practical skills required to work within the scientific field to help relate these skills to a possible career path. By doing this my students have been better able to understand the value these skills hold and it has helped with participation.

How has it benefited your colleagues?

After discussing my experiences, a colleague has now signed up for a placement this year and I have also signed up again to participate with another company – I would like to make it an

annual occurrence. I have shared my experiences with my STEM colleagues and suggested to them that they may wish to participate in the future. I have shared all of my experiences with my fellow teachers and reminded them of making our teaching content relevant to the real world and helping guide our students.

What are your future plans from this experience?

We have arranged several trips and talks. We will be taking some classes to Syngenta to see how they work, job roles, experiences of staff and skills required. Staff from Syngenta will also be visiting the school to give a careers talk to our students.

What would you say to other teachers considering the scheme?

Do it. The experience is tremendous fun and you will gain a wealth of knowledge. I have laid the foundations of a successful partnership between my placement and my school. Choose a partner that will benefit your school or college the most and will best complement your curriculum.

DEVELOP YOUR AWARENESS OF STEM-RELATED CAREERS

STEM Insight

■ www.stem.org.uk/ms/stem-insight

Syngenta placement

■ www.stem.org.uk/ty807

STEM careers toolkit

■ www.stem.org.uk/ms/careers-toolkit

STEM Ambassadors

■ www.stem.org.uk/ms/stem-ambassadors

Careers in STEM

■ www.stem.org.uk/rp226

The new design and technology GCSEs – changes, challenges and opportunities

The reforms to the design and technology GCSEs have been a hot topic of debate for the past year. We ask four different schools how they are planning and preparing for these changes.

by **GEMMA TAYLOR**
@gtaylorSTEM

Technology CPD Lead,
National STEM Learning Network

CALTHORPE PARK SCHOOL, FLEET

“We are teaching GCSEs in food, and design and technology, and will be considering technical awards as more information is released. We have just started a three-year GCSE programme so our current Year 9s will be the first to take the new GCSE.”

My current Year 9s are doing three rotations this year, a term each in resistant materials, systems and graphics to build up knowledge in different material areas. In Years 10 and 11 they will spend more time in their favourite option, eg resistant materials, but will still rotate through the other two areas, ie systems and graphics, to keep that breadth of knowledge in preparation for the exam. As a department, the key challenge for us in preparing for the new curriculum is time. There is lots to do with reviewing current projects and developing new schemes of work.

We are also working hard to communicate with other subject teachers. Many colleagues are amazed to hear that we will have an exam worth 50%, mathematics will account for 15% of the exam, and the making part of the pupil's final year project will only be worth 15% of their overall grade. ”

- David Hainsworth,
Head of Department
@Room35MrD

THE DEEPINGS SCHOOL, PETERBOROUGH

“We are teaching the new food GCSE, the new design and technology GCSE, and technical awards in materials technology, and fashion and textiles.”

To prepare for the new qualifications, we spent a lot of last summer going through the OFQUAL guidance for the new GCSE, and working backwards to prepare the Key Stage 3 schemes of learning. Our aim is to give a good background to the core principles in Years 7 and 8, supporting the three-year GCSE courses that we teach. Year 9 for us is the beginning of the specialist technical knowledge, building on the core principles.

To ensure that our subject knowledge is up to date, we've developed a network of teachers in both our own and other schools, and are putting together a timetable of self-led CPD to ensure we all have the basics of the core knowledge. We've made links with our mathematics and science departments to support the crossover content. We're also making good use of the National STEM Learning Centre courses – three of us are booked on different courses so far this year! ”

- Lucy Spencer,
Head of Department
@DT_Deepings

THE WARRINER SCHOOL, BLOXHAM

“At Key Stage 4, our department will be teaching GCSEs in food, design and technology, and engineering. The curriculum changes will allow staff to broaden their horizons and get their creative juices flowing.”

These changes allow us the opportunity to start from ground zero and build a curriculum that is more relevant to how the world operates today. For the students, I think the new curriculum will allow them to be more creative and also experience a more realistic design and make process – as generally products do not just involve one material.

It will also allow students to gain a greater understanding of the wider issues that surround design and technology, as well as a better awareness of what can be created and manufactured through a multi-faceted approach. ”

- Simon James,
Head of Department

GREIG CITY ACADEMY, LONDON

“Our department is planning to teach the new design and technology GCSE content by having students opt to work in different material areas that our teachers specialise in, and have all teaching staff able to teach the examined content.”

To ensure that our students are prepared for the increased mathematics, science and technical content, we have redesigned our Key Stage 3 curriculum and have developed a range of new projects for Key Stage 4, specifically based on different material areas, including a range of electronics and robotics projects. Our department mapped our existing projects, assigned areas that needed to be improved and each teacher then picked up the areas they were most interested in. ”

- Daniel Knappert,
Head of Department

GREAT TIPS FOR PLANNING THE NEW DESIGN AND TECHNOLOGY GCSES:

“Map your Key Stage 3 against the 2014 Key Stage 3 National Curriculum as it was designed to feed into the new design and technology GCSE, with much of the GCSE content that is perceived as new actually being part of KS3 already. This will enable your department to adapt your Key Stage 3 curriculum in order to embed GCSE concepts earlier, particularly the broader materials content, reducing the pressure at GCSE, both in terms of delivering the content, as well as reducing new learning for teachers.”

Julie and Paul Boyd
@Julieboydonline and @qboyd

“When preparing for the new GCSE don't go it alone. Collaboration is the best way to prepare. See what your local schools are doing to get ready for the new specifications, attend CPD courses to get an insight into what direction you should take your department in. Think about what new and emerging technologies you can integrate into lessons, will it be 3D printing and the Crumble controller? Exciting times lay ahead. Embrace and enjoy!”

Phil Cotton
@philipacotton

“For each year group, consider setting a context challenge where different outcomes are modelled by pupils on their own or in teams... it's not as hard to manage as you might think!”

James Bleach
@jambledand

GET PREPARED FOR THE NEW GCSES

Getting it right in Key Stage 3, laying good foundations for design and technology GCSE
■ www.stem.org.uk/ty241

Using 3D printers creatively in KS3 and KS4 design and technology
■ www.stem.org.uk/ty214

Technicians supporting the new design and technology GCSE
■ www.stem.org.uk/ny621

Supporting your mathematics department

by **STEVE LYON**

@SteveJLyon

Mathematics Specialist, National STEM Learning Network

We find ourselves in a time of unparalleled development in mathematics education. In July 2016, Education Minister Nick Gibb announced that £41m would be available over the next four years to support the teaching of mathematics in schools. This will have a direct impact on the teaching of mathematics in secondary schools across the country.



Furthermore, in summer, 16-year-old students will sit the new GCSE mathematics examinations for the first time. This September will see the launch of the new linear mathematics A level, in which all students must cover pure mathematics, mechanics and statistics content. Add to this mix the students who have to retake GCSE mathematics if they haven't achieved a grade 4, more schools offering core maths to their post-16 students, and new accountability measures; the list goes on!

It seems departments need to keep changing in order to keep up, and the most successful departments are those best equipped to deal with, and reflect on, change. Whether it be senior leaders, mathematics advisers within academy chains, heads of department, or indeed anyone with any leadership role within mathematics education, it is important that those with responsibility for challenging and supporting mathematics teachers play their part in ensuring that changes are implemented successfully.

ACME's 2016 Professional Learning For All Teachers of Mathematics report provides a useful starting point, as it "can be used to reflect on a teacher's own learning journey,

how senior leaders are supporting and fostering that learning and how schools and colleges are nurturing their teachers' learning".

It is important that teachers are aware of the range of high quality support that will have the most impact. It is crucial that this support is built in to departmental and school development plans and that barriers are not put in the way of teachers wishing to accept the range of support on offer.

TAKE A LOOK AT THE WEALTH OF MATHEMATICS SUPPORT AVAILABLE

Challenging and supporting your mathematics department
www.stem.org.uk/my505

Secondary mathematics resource packages
www.stem.org.uk/ms/secondary-maths

Peruse our mathematics CPD
www.stem.org.uk/ms/cpd

Getting to grips with genomics

by **ALICE OVERTON-SMITH**

Biology teacher and Year 9 Learning Manager, Westcliff High School for Girls (lead school for Science Learning Partnership Southend, Essex and Thurrock)

The new A level biology curriculum has been updated to include some of the latest developments in genomics and biotechnology: the rapid sequencing of entire genomes is mind-blowing. This gives teachers opportunities for some truly fantastic practicals that students will enjoy and that will reinforce their learning: gel electrophoresis and the transformation of bacteria are key. But some teachers may not have the confidence to carry out these practical activities with their classes.

Our work as a Science Learning Partnership gives us the opportunity to take on new challenges and experience a range of possibilities. Our biology teachers have undergone additional training with STEM Learning and the Wellcome genome campus to enable us to become a genomics hub. The aim of these hubs is to provide teachers with support in the pedagogy of genomics and to signpost them to appropriate resources such as those produced by the Wellcome genome campus.

EXPLORE THE EXCITING TOPIC OF BIOINFORMATICS

Bioinformatics: biology meets computer science
www.stem.org.uk/ny268

Technicians supporting biology: 11-19
www.stem.org.uk/ny604

New to A level biology
www.stem.org.uk/ny250

Post-16 genetics and genomics collection
www.stem.org.uk/cx5pa4

Strengthening practical work in biology
www.stem.org.uk/rp200

Delivering the latest science curriculum
www.stem.org.uk/rp223

So how can a teacher get engaged with genomics? Here are three ways to inspire and support your genomics journey.

RESOURCES

There are lots of brilliant resources to support the teaching of genomics and biotechnology. They are high quality and easy to drop into your existing schemes. The resources can be adapted to suit different abilities and age ranges – learning about new technologies is not just for the high flyers. Students have been particularly engaged by some of the online resources where they can see simulations and interrogate DNA databases.

TECHNICIANS

Work with your technicians, they play a vital role in genomics and biotechnology experiments. Experiments need not be too expensive; your technicians can give you advice on how to keep costs down for practicals that are essential. They can find suppliers to support with the provision of materials, and look at ways to reduce the use of consumables.

STEM AMBASSADORS

Linking up with a STEM Ambassador is a great idea too. They can share their experiences and highlight how the techniques you teach are applied in their field. This helps students to develop their practical competency as well as find out about potential career opportunities and what they would do as a biotechnology researcher.

Genomics is fascinating and it really interests students, so don't be shy and get stuck into this captivating subject.

Strategic use of CPD: my wish list for 2017

by **FRAN DAINTY**

Head of Content and STEM Expertise, National STEM Learning Network

Empowered, inspiring and highly effective teaching and support staff.....



Student engagement, achievement and progress are on track to reach record highs.....



Successful recruitment of high quality staff.....



So, as a line manager, head of department or senior leader how do you achieve, and more importantly, sustain this?

The key is in your approach to a highly personalised CPD strategy defined by both you and those that you lead or manage. Establishing a climate where teachers can both collectively and individually identify specific areas of their own development will create a forward thinking, motivated and highly skilled staff. They will feel empowered to select and plan their own personalised and high impact CPD that will meet their demands.

The Teacher Standard for CPD, published last year, clearly defines the role and responsibility of teachers and leaders in providing opportunities for CPD. This is a powerful tool in providing guidance and informing your CPD strategy and sourcing high impact, evidence-based CPD, which is subject specific and cutting edge, is easier than you think!

Teachers will always have individual needs and targets to meet alongside those of the whole school. Retention and development of teachers must be addressed and clear pathways of support must be easily accessible, affordable and guarantee impact on both self, colleagues and children if they are to leave the classroom for any period of time. So as a head of department, senior leader or line manager how do you establish a culture where teachers feel valued, inspired and empowered to take their lessons to the next level?

1 Ask teachers to carry out a regular audit or needs analysis of their individual, subject-specific areas of development and identify, together, which areas would have the greatest impact on student achievement. Then act on them!

2 Establish the career aspirations of your individual team members early on and identify opportunities both within the school or college and beyond that will develop potential and empower teachers to improve their expertise and leadership.

3 Promote peer mentoring across the school or college to utilise the expertise and support already there. This will have great benefits for all staff involved and will strengthen teams and boost morale.

4 Celebrate even the smallest successes and achievements so that staff feel valued and their efforts are recognised. In the fast-paced environment of a school or college this can be overlooked, but the power of a 'well done' cannot be underestimated.

5 Provide opportunities for staff to learn and develop their subject expertise together. This could be engaging in CPD such as an online course, around a particular area – behaviour, assessment, differentiation, non-specialisms – or bespoke CPD using local or national expertise.

CPD AT EVERY STAGE

STEM LEADERSHIP

Established heads of science: strategic leadership of your team
■ www.stem.org.uk/ny257

Developing a STEM curriculum in KS3 design and technology
■ www.stem.org.uk/ty245

Challenging and supporting your mathematics department
■ www.stem.org.uk/my505

New and aspiring heads of secondary computing
■ www.stem.org.uk/cy200

Senior technicians accredited co-leaders in science (STACS)
■ www.stem.org.uk/ny600

Essential skills for new and aspiring science leadership
■ www.stem.org.uk/rp206

SUBJECT KNOWLEDGE ENHANCEMENT

Aiming for grade 9 in science
■ www.stem.org.uk/ny270

Teaching electronics, including E-textiles, in design and technology GCSE
■ www.stem.org.uk/ty240

Using manipulatives to enhance understanding in secondary mathematics
■ www.stem.org.uk/my210

Algorithms in GCSE computer science
■ www.stem.org.uk/cy205

Practical skills for teaching assistants
■ www.stem.org.uk/ny626

Strengthening practical work in biology
■ www.stem.org.uk/rp200

Strengthening practical work in chemistry
■ www.stem.org.uk/rp201

Strengthening practical work in physics
■ www.stem.org.uk/rp202

NEWLY QUALIFIED

Chemistry for non-specialists
■ www.stem.org.uk/ny243

Getting it right in key stage 3, laying good foundations for design and technology GCSE
■ www.stem.org.uk/ty241

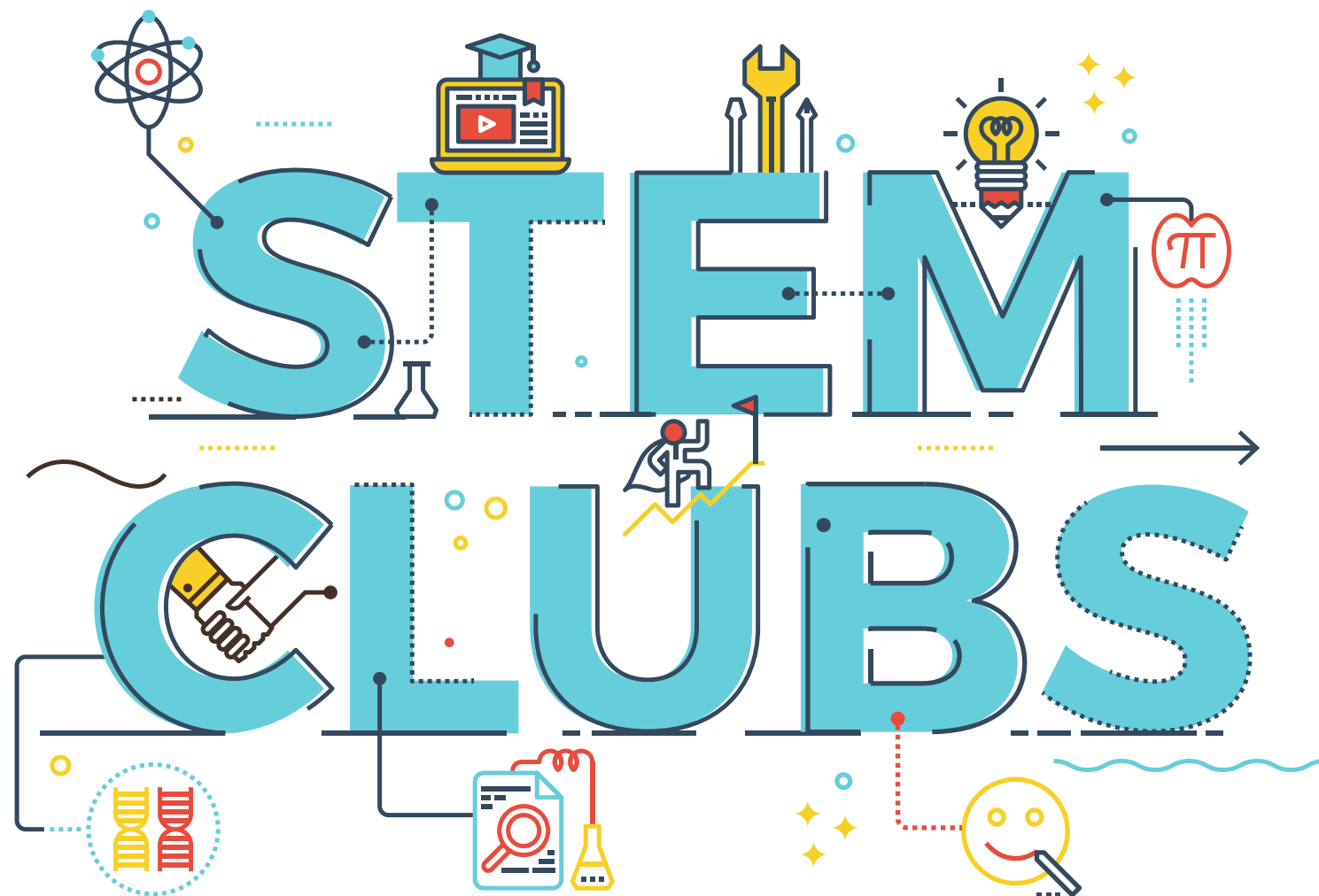
Building confidence as a newly qualified mathematics teacher
■ www.stem.org.uk/my205

New to teaching A-level computer science w
■ www.stem.org.uk/cy202

Skills for new technicians
■ www.stem.org.uk/ny601

New and recently qualified teachers' conference
■ www.stem.org.uk/rp214

Offer a richer experience of STEM subjects to your students through a STEM Club



"Each week it is something different and it challenges you in a different way."

- Student

- increased enthusiasm for STEM subjects
- improved practical, teamwork and presentation skills
- a wider understanding of STEM applications and careers

Engage students of all abilities, develop links with local businesses, broaden your knowledge of STEM careers and increase student engagement and attainment in STEM.

FREE SUPPORT FOR YOUR STEM CLUB

Explore free guides to help you set up a STEM Club:
www.stem.org.uk/rxvg5



Free, inspirational activities for your STEM Club:
www.stem.org.uk/stem-clubs

CALENDAR

Our top picks for you to put in the calendar..

JUNE 2017

EDITOR'S
TOP
PICK
CHOICE



INTERNATIONAL WOMEN IN ENGINEERING DAY
23 JUNE 2017

Currently around 9% of the UK's engineering workforce is female, this annual awareness day aims to celebrate the women that are working in engineering and encourages others to consider a career in engineering.

■ www.inwed.org.uk



ASTEROID DAY
29 JUNE 2017

Asteroid Day is a global awareness campaign where people from around the world come together to learn about asteroids and what we can do to protect our planet.

■ www.stem.org.uk/rxxa2

JULY 2017



ENTHUSE CELEBRATION AWARD CEREMONY
20 JULY 2017

Designed to recognise the impact that teachers, technicians and support staff have on students, colleagues and schools, the ENTHUSE Celebration Awards take place annually. This year, there are a number of regional events taking place all around the UK, with the national final taking place at the Houses of Parliament in July.

■ www.stem.org.uk/ms/enthuse-celebration-awards

AUGUST 2017



GCSE AND A LEVEL RESULTS DAYS
AUGUST 2017

A level results day is taking place on 17 August 2017 and GCSE results day is a week later on 24 August 2017. Though this is a very stressful time for many students, it is also a time of great excitement. Keep an eye on our website to find out the key findings in STEM subjects.

■ www.stem.org.uk

SOCIAL MEDIA

Let's take a peek at what people have been tweeting:

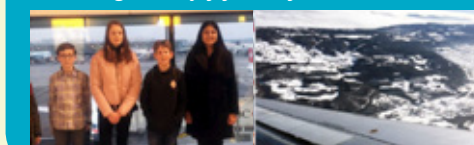
@STEMLearningUK
Followers: 25K

@FitzzSarah

Wow, the library in the @STEMLearningUK centre is amazing!! So many fantastic resources for doing STEM in schools

@AshcroftAcademy

Four students are travelling to CERN today to see the Large Hadron Collider as a prize for best STEM club in England. Enjoy your day!



@Mjogalvin

@yvonnebaker 2 of my team saying what fantastic CPD they had at STEM centre. 'Best ever', 'life changing' wow! @STEMLearningUK

@ani2tall

Catalyst, the secondary science review always teaches me & my students so much, thanks @STEMLearningUK stem.org.uk/catalyst #STEMed

@glanymorStem

Just arrived, ready for an exciting day tomorrow @CERN, added bonus snow on the ground! @STEMLearningUK #STEMInspirationAwards

@horsfall3d

I visited the National #STEM Learning Centre today. A unique building with an inspirational collection of resources @STEMLearningUK

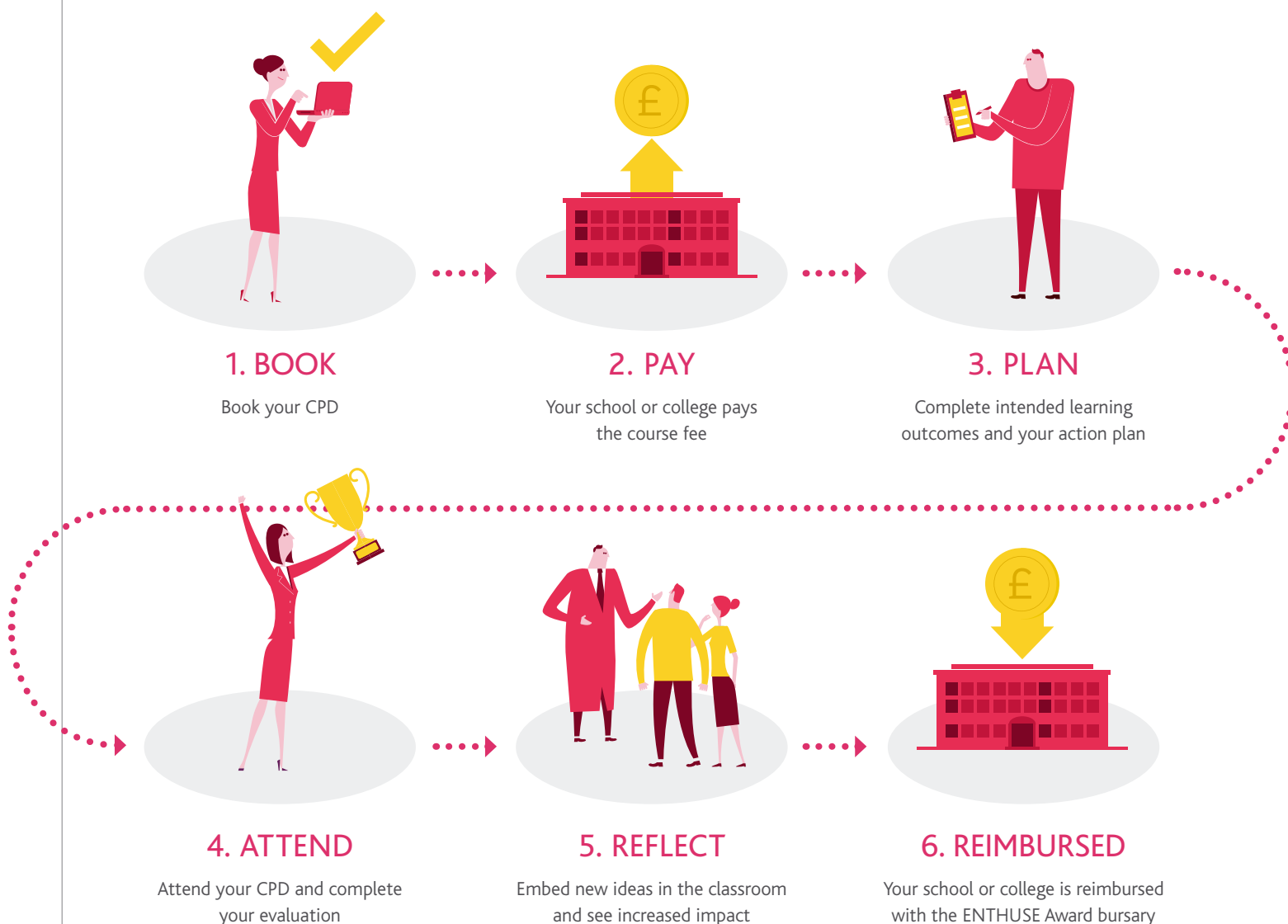


Follow us @STEMLearningUK and let us know what STEM related things you're up to!



Our ENTHUSE Award bursary-funded residential courses are run at the National STEM Learning Centre in York.

Teachers or technicians working in state-funded schools or colleges in the UK are eligible for these bursaries which can be used to contribute to covering the cost of course fees, supply cover, travel, accommodation, or equipment.



Plan your autumn term CPD

We believe all young people across the UK should receive a world-leading STEM education. We work towards our vision by making it easy for teachers and others involved in STEM education to access subject-specific, quality-assured CPD, so they can teach effectively and inspire the young people with whom they work.

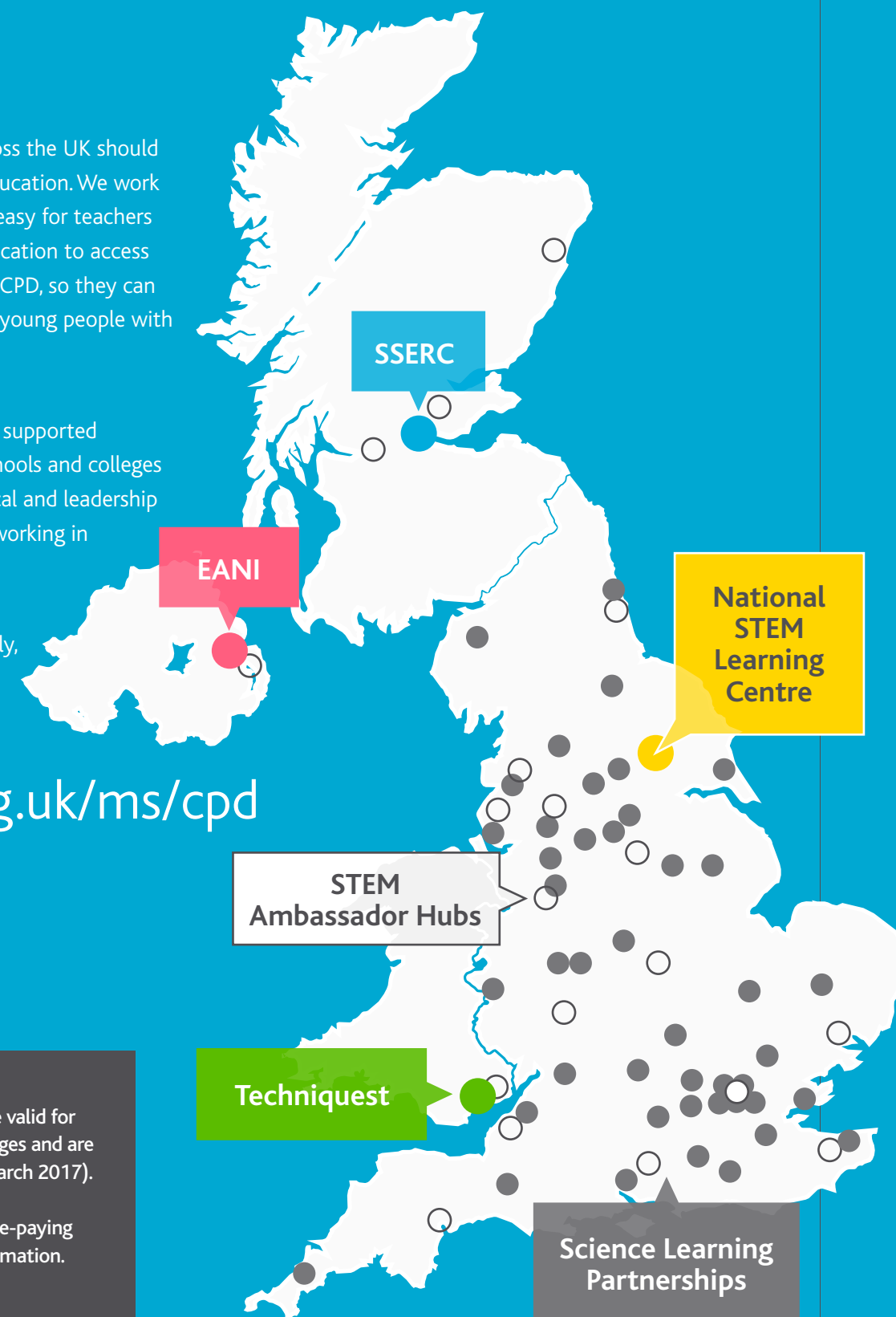
We provide high impact, bursary supported professional development for schools and colleges that improves subject, pedagogical and leadership skills and knowledge for people working in STEM education.

You can access our CPD nationally, locally and online by visiting our website for our comprehensive programme of CPD:

www.stem.org.uk/ms/cpd

All fees and award values are valid for state-funded schools and colleges and are correct at the time of print (March 2017).

See www.stem.org.uk for fee-paying schools and the latest information.



COMPUTING

INTENSIVE SUBJECT-SPECIFIC CPD
Accommodation and meals included

A LEVEL COMPUTER SCIENCE
THEORY: TEACHING THE TOUGH
TOPICS

Be more effective in the classroom and learn how to support your students to maximise their exam success.

- Your school receives: £1,400 ENTHUSE Award
- Activity fee: £1,000 (ex VAT)
- 18 December 2017 (4 days)

■ www.stem.org.uk/cy230

MATHEMATICS FOR A LEVEL
COMPUTER SCIENCE

Teaching a subject outside of your specialism is tricky. Learn everything you need to confidently teach mathematics topics within A level computer science on this activity.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 08 November 2017 (2 days)

■ www.stem.org.uk/cy211

MICRO:BIT IN SECONDARY
COMPUTING

Discover how to integrate the micro:bit into your secondary computing curriculum with a host of exciting projects to dive into.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 20 November 2017 (2 days)

■ www.stem.org.uk/cy224

NEW AND ASPIRING HEADS OF
SECONDARY COMPUTING

Learn how good subject leadership can have a positive impact on computing teaching.

- Your school receives: £1,200 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 14 December 2017 (4 days)

■ www.stem.org.uk/cy200

NEW TO TEACHING A LEVEL
COMPUTER SCIENCE

Improve your subject knowledge, explore practical and investigative activities including a range of programming challenges, and deepen understanding of underlying concepts.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 11 October 2017 (2 days)

■ www.stem.org.uk/cy202

NEW TO TEACHING GCSE
COMPUTER SCIENCE

Explore the themes that are common to all exam boards, such as algorithms, programming, computer systems, networking and data.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 30 October 2017 (2 days)

■ www.stem.org.uk/cy201

ALGORITHMS IN A LEVEL
COMPUTER SCIENCE

Develop your understanding of the abstraction of problems and examine procedural, functional and data abstraction. Learn how to trace algorithms, predicting outcomes from initial conditions and analyse the effectiveness and complexity of different algorithms.

- Your school receives: £300 ENTHUSE Award
- Activity fee: £250 (ex VAT)
- 17 October 2017 (1 day)

■ www.stem.org.uk/cy206

ALGORITHMS IN GCSE
COMPUTER SCIENCE

Explore engaging ideas to help students understand how to read and create algorithms to solve problems, recognising patterns and designing for efficiency.

- Your school receives: £300 ENTHUSE Award
- Activity fee: £250 (ex VAT)
- 16 October 2017 (1 day)

■ www.stem.org.uk/cy205

"I enjoyed the whole course, but especially the dealing with data types, naming variables and tackling real life problems. I also found it very useful to talk to other teachers who had better, or different, areas of knowledge."

- Dave Clark
Christ the King Catholic High School

Computing past participant

ALGORITHMS IN KEY STAGE
3 COMPUTING WITH CAS
TENDERFOOT

Enhance your computing knowledge, gain a deeper understanding of the subject and discover exciting activities to stimulate your students.

Your school receives: £300 ENTHUSE Award

- Activity fee: £250 (ex VAT)
- 15 November 2017 (1 day)

■ www.stem.org.uk/cy225

DATA REPRESENTATION IN KEY
STAGE 3 COMPUTING WITH CAS
TENDERFOOT

Enhance your computing knowledge, gain a deeper understanding of the subject and discover exciting activities to stimulate your students.

- Your school receives: £300 ENTHUSE Award
- Activity fee: £250 (ex VAT)
- 06 October 2017 (1 day)

■ www.stem.org.uk/cy227

PROGRAMMING AND DATA
STRUCTURES WITH CAS
TENDERFOOT

Explore the pedagogy in teaching computing and learn how to effectively transition to textual programming while developing computational thinking.

- Your school receives: £300 ENTHUSE Award
- Activity fee: £250 (ex VAT)
- 29 November 2017 (1 day)

■ www.stem.org.uk/cy226



STEM Educators

Running throughout the year, this free recognition scheme is designed to celebrate the impact your professional development has on you, your students and your school or college.

■ Apply today at:
www.stem.org.uk/ms/stem-educators

DESIGN AND
TECHNOLOGY

INTENSIVE SUBJECT-SPECIFIC CPD
Accommodation and meals included

DEVELOPING AN ENGINEERING
CURRICULUM IN KEY STAGE 3
DESIGN AND TECHNOLOGY

Gain ideas on how to implement an engineering curriculum in your key stage 3 design and technology lessons.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 04 December 2017 (2 days)

■ www.stem.org.uk/ty244

DEVELOPING A STEM CURRICULUM
IN KS3 DESIGN AND TECHNOLOGY

Found out how to bring more STEM-related content into your key stage 3 design and technology lessons, with help from our subject specialists.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 16 October 2017 (2 days)

■ www.stem.org.uk/ty245

DEVELOPING KNOWLEDGE AND
PRACTICAL SKILLS FOR DESIGN
AND TECHNOLOGY GCSE

Develop your knowledge and practical skills to confidently teach the design and technology GCSE.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 24 November 2017 (2 days)

■ www.stem.org.uk/ty242

DEVELOPING MATHEMATICS
SKILLS FOR THE NEW DESIGN AND
TECHNOLOGY GCSE

Improve your subject knowledge and develop strategies for teaching the mathematics content in the new design and technology GCSE.

- Your school receives: £700 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 01 November 2017 (2 days)

■ www.stem.org.uk/ty225

ENGINEERING GCSE: GETTING TO
GRIPS WITH THE ENGINEERING,
MATHEMATICS AND SCIENCE
SUBJECT CONTENT

Improve your engineering, mathematics and science subject knowledge and develop teaching strategies for teaching the engineering GCSE.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 18 October 2017 (2 days)

■ www.stem.org.uk/ty224

GCSE FOOD PREPARATION AND
NUTRITION: IDEAS FOR TEACHING
FOOD SCIENCE

Develop your food science subject knowledge and learn how your school or college food curriculum can be adapted to include food science.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 24 November 2017 (2 days)

■ www.stem.org.uk/ty205

GETTING IT RIGHT IN KEY STAGE 3,
LAYING GOOD FOUNDATIONS FOR
DESIGN AND TECHNOLOGY GCSE

Find out how to develop your key stage 3 curriculum, supporting progression into design and technology GCSE.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 16 November 2017 (2 days)

■ www.stem.org.uk/ty241

GETTING TO GRIPS WITH USING
THE CRUMBLE CONTROLLER
IN KEY STAGE 3 DESIGN AND
TECHNOLOGY

Learn how the Crumble controller can be used in design and technology to create electronic products at key stage 3.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 06 November 2017 (2 days)

■ www.stem.org.uk/ty237

MICRO:BIT IN SECONDARY
DESIGN AND TECHNOLOGY

Discover how the micro:bit can be used to create programmable electronics projects in design and technology.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 20 November 2017 (2 days)

■ www.stem.org.uk/ty238

TEACHING ELECTRONICS,
INCLUDING E-TEXTILES, IN DESIGN
AND TECHNOLOGY GCSE

Taking you from being an absolute beginner in electronics, including E-textiles, to having the confidence to tackle basic programming in the classroom.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 03 November 2017 (2 days)

■ www.stem.org.uk/ty240

USING SMART AND MODERN
MATERIALS TO CREATE A
FUTURE FACING DESIGN AND
TECHNOLOGY CURRICULUM

Prepare your students for the modern world by making the most of smart and modern materials in your lessons.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 10 November 2017 (2 days)

■ www.stem.org.uk/ty239

USING 3D PRINTERS CREATIVELY
IN KS3 AND KS4 DESIGN AND
TECHNOLOGY

Find out how to make better use of your 3D printer in the classroom and fix those troublesome printing issues!

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 10 November 2017 (2 days)

■ www.stem.org.uk/ty214

VEX IQ: INTEGRATING ROBOTICS
INTO YOUR CURRICULUM

No previous programming experience required. Learn how to use VEX IQ in your STEM-related classes and receive your own free VEX IQ Super Kit.

- Your school receives: £700 ENTHUSE Award
- Activity fee: £650 (ex VAT)
- 03 November 2017 (2 days)

■ www.stem.org.uk/ty706

"I now feel more confident in teaching the science aspect of the new food preparation and nutrition GCSE qualification. I feel that the approaches I have been shown will enable me to engage the least able students and to challenge the most able."

- Sharon Mayo
Horsforth School

GCSE food preparation and nutrition: ideas for teaching food science

MATHEMATICS

INTENSIVE SUBJECT-SPECIFIC CPD
Accommodation and meals included

BUILDING CONFIDENCE AS
A NEWLY QUALIFIED
MATHEMATICS TEACHER

Explore what makes good mathematics teaching by considering questioning, promoting positive behaviour, planning for learning and giving feedback.

- Your school receives: £1,400 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 16 November 2017 (4 days)

■ www.stem.org.uk/my205

DEVELOPING SHARED APPROACHES
TO MATHS IN SCIENCE AND
SCIENCE IN MATHS

Identify common content and explore ways of teaching that develop sufficient mathematical understanding whilst providing fluency in the skills required for science.

- Your school receives: £1,400 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 11 December 2017 (4 days)

■ www.stem.org.uk/my214

EFFECTIVE FEEDBACK AND
ASSESSING PROGRESS IN
SECONDARY MATHEMATICS
WITHOUT LEVELS

Explore the different uses of assessment, consider the features of effective feedback and examine how understanding can be assessed in mathematics. Different models for tracking progress will also be evaluated.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 27 November 2017 (2 days)

■ www.stem.org.uk/my208

MASTERING MATHEMATICS AT KEY
STAGE 3

Discover how to successfully make the transition between primary and secondary mathematics and develop techniques to establish problem solving skills.

- Your school receives: £1,400 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 04 December 2017 (4 days)

■ www.stem.org.uk/my218

TEACHING MATHEMATICS GCSE
CONTENT WITH UNDERSTANDING

Explore the new mathematics GCSE and gain an understanding of the importance of mathematical reasoning and problem solving.

- Your school receives: £1,200 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 23 November 2017 (4 days)

■ www.stem.org.uk/my207

TEACHING THE NEW
MATHEMATICS A LEVEL

Explore approaches to teaching that strengthen the overarching themes of mathematical argument and proof, problem solving, and mathematical modelling.

- Your school receives: £1,400 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 04 October 2017 (4 days)

■ www.stem.org.uk/my216

USING MANIPULATIVES TO
ENHANCE UNDERSTANDING IN
SECONDARY MATHEMATICS

Learn how to encourage active learning in mathematics with the use of manipulatives or 'objects to think with'. A great opportunity to use and reflect on manipulatives.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 09 November 2017 (2 days)

■ www.stem.org.uk/my210

CHALLENGING AND SUPPORTING
YOUR MATHEMATICS DEPARTMENT

Join our mathematics conference to understand what it takes to successfully deliver the new mathematics specifications.

- Your school receives: £100 ENTHUSE Award
- Activity fee: £80 (ex VAT)
- 20 October 2017 (1 day)

■ www.stem.org.uk/my505

RESOURCING THE SECONDARY
MATHEMATICS CURRICULUM

Explore resources designed to support improved teaching of the new curriculum with hands-on activities.

- Activity fee: £80 (ex VAT)
- 26 September 2017 (1 day)

■ www.stem.org.uk/my202

SCIENCE

INTENSIVE SUBJECT-SPECIFIC CPD
Accommodation and meals included

AIMING FOR GRADE 9 IN SCIENCE

Support your students to reach grade 9 in GCSE science by exploring new strategies and activities.

- Your school receives: £1,400 ENTHUSE Award
- Activity fee: £1,000 (ex VAT)
- 25 September 2017 (4 days)

■ www.stem.org.uk/ny270

CERN STUDY VISIT AND
FOLLOW-UP CONFERENCE

A unique opportunity for UK science teachers to visit CERN and have its facilities, functions and operation explained by the scientists and engineers who work there.

- Your school receives: £1,200 ENTHUSE Award
- Activity fee: £300 (ex VAT)
- 12 December 2017 (5 days)

■ www.stem.org.uk/nv200

DEVELOPING MASTERY IN
PRACTICAL SKILLS

Attend this course in York to help better equip your students to succeed at the new GCSE science exams.

- Your school receives: £1,400 ENTHUSE Award
- Activity fee: £1,000 (ex VAT)
- 18 September 2017 (4 days)

■ www.stem.org.uk/ny269

HEALTH AND SAFETY FOR
SCIENCE DEPARTMENTS

Learn how to implement essential and effective health and safety planning with a pragmatic, risk based approach.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £500 (ex VAT)
- 30 October 2017 (2 days)

■ www.stem.org.uk/ny253

LAB DESIGN: PLANNING
SCIENCE ACCOMMODATION

Well-planned, imaginative and practical science spaces in schools and colleges can create outstanding learning environments for both students and teachers.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 08 November 2017 (2 days)

■ www.stem.org.uk/ny211

MAXIMISING PROGRESS
FOR LOW ABILITY LEARNERS

Discover techniques to support low ability learners and maximise their achievement.

- Your school receives: £1,400 ENTHUSE Award
- Activity fee: £1,000 (ex VAT)
- 01 November 2017 (4 days)

■ www.stem.org.uk/ny274

USING IPADS, CHROME
BOOKS AND OTHER TABLET
DEVICES IN SECONDARY SCIENCE

Learn how teaching with iPads and other tablet devices can improve engagement in lessons and play a key role in improving student outcomes in secondary science.

- Your school receives: £700 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 16 November 2017 (2 days)

■ www.stem.org.uk/ty243

BEHAVIOUR MANAGEMENT
IN SCIENCE

Supporting teachers new to the profession in considering ways of managing the behaviour of their students so that a positive, effective learning environment can be sustained.

- Browse dates and venues online

■ www.stem.org.uk/rp222

CAREERS IN STEM

Develop your understanding and support students in signposting career options.

- Browse dates and venues online

■ www.stem.org.uk/rp226

DELIVERING THE LATEST
SCIENCE CURRICULUM

Identify the key issues arising from the new curriculum and consider how to audit and adapt existing schemes of learning to accommodate the changes.

- Browse dates and venues online

■ www.stem.org.uk/rp223

EFFECTIVE PREPARATION FOR
EXAMINATIONS

Helping teachers in developing effective strategies for supporting students as they prepare for exams.

- Browse dates and venues online

■ www.stem.org.uk/rp211

ENGAGING AND ENSURING
PROGRESS OF LOW ATTAINERS
IN SCIENCE

Develop strategies to improve the progress made by low attaining students in science.

- Browse dates and venues online

■ www.stem.org.uk/rp229

ENHANCING LITERACY SKILLS
IN SCIENCE

Supporting participants in responding to the increased literacy demands in examinations and help to provide students with the skills to be effective, independent learners.

- Browse dates and venues online

■ www.stem.org.uk/rp212

IMPROVING PROGRESS
IN SCIENCE

In response to demand from teachers, this CPD activity is for those wishing to improve their students' progress and attainment in science.

- Browse dates and venues online

■ www.stem.org.uk/rp213

IMPROVING SUBJECT AND
CURRICULUM KNOWLEDGE IN...

It is important to keep up-to-date with current science matters, including pure subject knowledge, topic specific developments and general pedagogical methods.

- Browse dates and venues online

■ www.stem.org.uk/rp224

INTRODUCING THE NEW SCIENCE
GCSES AN UPDATE OF NEW GCSE
AND KS4 QUALIFICATIONS

An update of new GCSE and key stage 4 qualifications.

- Browse dates and venues online

■ www.stem.org.uk/rp230

MAKING A DIFFERENCE THROUGH
EFFECTIVE FEEDBACK

Trial a range of strategies for gathering and using data, explore the research behind assessment for learning, and develop and test your own techniques in the classroom.

- Browse dates and venues online

■ www.stem.org.uk/rp203

MATHEMATICS IN SCIENCE
TEACHING

Explore the use and failure to use mathematics in science. It looks at typical weaknesses in mathematics that hinder students' ability to understand and solve scientific problems.

- Browse dates and venues online

■ www.stem.org.uk/rp210

PREPARING FOR PRACTICAL
TEACHING AND ASSESSMENT
IN A LEVEL BIOLOGY

Prepares teachers to make effective use of practical work in the new A level science curriculum.

- Browse dates and venues online

■ www.stem.org.uk/rp510

PREPARING FOR PRACTICAL
TEACHING AND ASSESSMENT
IN A LEVEL CHEMISTRY

Designed to prepare teachers to make effective use of practical work in A level chemistry and use them to improve outcomes for students.

- Browse dates and venues online

■ www.stem.org.uk/rp512

PREPARING FOR PRACTICAL
TEACHING AND ASSESSMENT
IN A LEVEL PHYSICS

Together we look at how activities can be run effectively, used to support the awarding of the practical endorsement and to improve attainment.

- Browse dates and venues online

■ www.stem.org.uk/rp511

RESPONDING TO PUPIL
NEEDS IN SCIENCE

Develop strategies which personalise the science curriculum, in order to engage students of all abilities, widen engagement and participation, and increase progression to further science study.

- Browse dates and venues online

■ www.stem.org.uk/rp220

TEACHING ASSISTANTS
SUPPORTING LEARNING

Discover how to support students' learning most effectively.

- Browse dates and venues online

■ www.stem.org.uk/rp228

TOWARDS OUTSTANDING

Secure knowledge of what outstanding practice looks like strengthens the ability to support colleagues, for the benefit of themselves and their students.

- Browse dates and venues online

■ www.stem.org.uk/rp215

LEADERSHIP

INTENSIVE SUBJECT-SPECIFIC CPD

Accommodation and meals included

ESTABLISHED HEADS OF SCIENCE: STRATEGIC LEADERSHIP OF YOUR TEAM

If you want to develop your skills to meet the challenges of addressing the changes in expectations then this is the CPD for you.

- Your school receives: £1,500 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 11 December 2017 (5 days)

■ www.stem.org.uk/ny257

ESSENTIAL SKILLS FOR NEW AND ASPIRING SCIENCE LEADERSHIP

Working with an experienced science leader, you will develop your vision and leadership skills to enable you to lead an effective and vibrant science team.

- Browse dates and venues online

■ www.stem.org.uk/rp206

LEADING ACTION RESEARCH IN SCIENCE EDUCATION

Gaining further classroom enquiry skills will provide an opportunity for you to review and reflect on personal and professional practice to the benefit of your students.

- Browse dates and venues online

■ www.stem.org.uk/rp209

LEADING PROFESSIONAL DEVELOPMENT IN SCIENCE EDUCATION

Helping you to identify the principles, strategies and resources that can be used to develop a programme valued by colleagues and demonstrates impact in the science classroom.

- Browse dates and venues online

■ www.stem.org.uk/rp204

SUBJECT LEADERS NETWORK

This is a chance for collaboration with your peers so you can share information and develop as a leader. Expert consultants will help you identify priority issues in teaching and learning and professional development for your teams.

- Browse dates and venues online

■ www.stem.org.uk/rp219

BIOLOGY

INTENSIVE SUBJECT-SPECIFIC CPD

Accommodation and meals included

NEW TO A LEVEL BIOLOGY

Through the development of new practical techniques, use of ICT activities and context based learning strategies, this CPD will provide a foundation for those with little experience of teaching A level biology.

- Your school receives: £1,200 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 11 October 2017 (4 days)

■ www.stem.org.uk/ny250

UNPICKING THE EXAMINER'S REPORT A LEVEL BIOLOGY

Analyse examiners' subject reports to find out how to develop your teaching strategies in A level biology

- Your school receives: £700 ENTHUSE Award
- Activity fee: £500 (ex VAT)
- 2 October 2017 (2 days)
- 10 November 2017 (2 days)

■ www.stem.org.uk/ny271

ACTIVE APPROACHES IN A LEVEL BIOLOGY

Providing opportunities to explore the acknowledged benefits of active, collaborative and 'minds-on' approaches to learning at A level.

- Browse dates and venues online

■ www.stem.org.uk/rp506

GETTING TO GRIPS WITH A LEVEL BIOLOGY

Supporting teachers in developing higher level thinking with students through the use of practical work, demonstrations and modelling activities.

- Browse dates and venues online

■ www.stem.org.uk/rp501

GOING FURTHER IN A LEVEL BIOLOGY

Discussing the wider implications and applications of biology and exploring some tools for teaching and learning, will broaden and deepen your repertoire of practical activities and teaching approaches.

- Browse dates and venues online

■ www.stem.org.uk/rp509

STRENGTHENING PRACTICAL WORK IN BIOLOGY

Explore strategies for teaching topics across the biology curriculum and develop an understanding of how practical work can be made more relevant and effective.

- Browse dates and venues online

■ www.stem.org.uk/rp200

CHEMISTRY

INTENSIVE SUBJECT-SPECIFIC CPD

Accommodation and meals included

CHEMISTRY FOR NON-SPECIALISTS

Providing teachers with the confidence, flair and enthusiasm to teach chemistry at all levels.

- Your school receives: £1,750 ENTHUSE Award
- Activity fee: £1,500 (ex VAT)
- 18 December 2017 (5 days)

■ www.stem.org.uk/ny243

NEW TO TEACHING A LEVEL CHEMISTRY

With much of chemistry centred around good experimental skills, this CPD activity allows you to develop, lead and support outstanding practical chemistry, linking it to effective pedagogy within the subject.

- Your school receives: £1,200 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 04 October 2017 (4 days)

■ www.stem.org.uk/ny251

UNPICKING THE EXAMINER'S REPORT - A LEVEL CHEMISTRY

Develop your teaching in A level chemistry by analysing examiners' subject reports.

Your school receives: £700 ENTHUSE Award

- Activity fee: £500 (ex VAT)
- 09 October 2017 (2 days)
- 17 November 2017 (2 days)

■ www.stem.org.uk/ny273

ACTIVE APPROACHES IN A LEVEL CHEMISTRY

Providing opportunities to explore the acknowledged benefits of active, collaborative and 'minds-on' approaches to learning at A level.

- Browse dates and venues online

■ www.stem.org.uk/rp504

GETTING TO GRIPS WITH A LEVEL CHEMISTRY

Improve confidence in subject knowledge and skills appropriate to post-16 chemistry through the exploration of key ideas common to all specifications.

- Browse dates and venues online

■ www.stem.org.uk/rp502

GOING FURTHER IN A LEVEL CHEMISTRY

Confident teachers will deepen their repertoire of practical activities and teaching approaches with a key focus in the use of electronic technologies.

- Browse dates and venues online

■ www.stem.org.uk/rp508

MEETING THE DEMANDS OF CHEMISTRY IN THE NEW A-LEVEL SPECIFICATIONS

Explore how specific activities can be used to get across key concepts; use mathematics skills and develop practical skills in chemistry.

- Browse dates and venues online

■ www.stem.org.uk/rp514

MEETING THE DEMANDS OF CHEMISTRY IN THE NEW GCSE SPECIFICATIONS

This one day course will show how specific activities can be used to get across key concepts: use mathematics skills and develop practical skills in chemistry.

- Browse dates and venues online

■ www.stem.org.uk/rp232

STRENGTHENING PRACTICAL WORK IN CHEMISTRY

Through hands-on activities you will undertake new and established strategies and practical techniques to make students' learning more effective.

- Browse dates and venues online

■ www.stem.org.uk/rp202

"I will continue to develop the scheme of learning in order to continue to incorporate as much practical based learning as possible and design more interactive ways to teach less accessible topics."

- Dave Benson
Huddersfield New College

New to teaching A level chemistry

PHYSICS

INTENSIVE SUBJECT-SPECIFIC CPD

Accommodation and meals included

NEW TO A LEVEL PHYSICS

Develop your teaching schemes and discover how to incorporate exciting practicals into your A level physics lessons.

- Your school receives: £1,200 ENTHUSE Award
- Activity fee: £1,200 (ex VAT)
- 13 November 2017 (4 days)

■ www.stem.org.uk/ny252

PHYSICS FOR NON-SPECIALISTS

Discover how to teach secondary physics effectively through stimulating practicals and linking the curriculum to cutting edge research.

- Your school receives: £1,750 ENTHUSE Award
- Activity fee: £1,250 (ex VAT)
- 27 September 2017 (5 days)

■ www.stem.org.uk/ny201

UNPICK THE EXAMINER'S REPORT - A LEVEL PHYSICS

Analyse examiners' subject reports to support the development of your teaching strategies for the new physics A level.

- Your school receives: £700 ENTHUSE Award
- Activity fee: £500 (ex VAT)
- 18 October 2017 (2 days)
- 23 November 2017 (2 days)

■ www.stem.org.uk/ny272

ACTIVE APPROACHES IN A LEVEL PHYSICS

Working with others, you will refresh your teaching and learning strategies to improve you students' understanding of core concepts of A level physics.

- Browse dates and venues online

■ www.stem.org.uk/rp505

GETTING TO GRIPS WITH A LEVEL PHYSICS

Develop subject knowledge, confidence and skills primarily through the exploration of key demonstrations and practicals common to all specifications.

- Browse dates and venues online

■ www.stem.org.uk/rp503

GOING FURTHER IN A LEVEL PHYSICS

Ideal for teachers who are confident in their subject knowledge as there will be ample opportunity to try out these new approaches.

- Browse dates and venues online

■ www.stem.org.uk/rp507

PHYSICS FOR NON-SPECIALISTS

Develop your understanding of key physics principles and the skills and strategies needed to teach physics effectively.

- Browse dates and venues online

■ www.stem.org.uk/rp208

STRENGTHENING PRACTICAL WORK IN PHYSICS

Explore a range of ideas for teaching topics across the physics curriculum and develop an understanding of how practical work can be made more relevant and effective.

- Browse dates and venues online

■ www.stem.org.uk/rp201



Bringing cutting edge research into the classroom

Our innovative programme of cutting edge research CPD is designed to help you inspire your students.

Forensic analysis, nanotechnology, climate change, astrophysics and wearable technologies are just some of the topics that our CPD focuses on. Learn about advances in scientific research, update your knowledge, explore new contexts and discover practical activities to help you deliver the curriculum in an accessible, enjoyable and stimulating way for your students.

A bursary is available for state funded schools or colleges.

■ www.stem.org.uk/ms/rcuk

TRIPLE SCIENCE

IDENTIFYING AND INSPIRING YOUR STUDENTS IN TRIPLE SCIENCE

Use different sources of data to identify students suitable for triple science.

- Browse dates and venues online
- www.stem.org.uk/rp781

MANAGING EFFECTIVE PRACTICAL WORK IN TRIPLE SCIENCE

Teachers who are new to teaching triple science will explore ways to develop their use of practical work.

- Browse dates and venues online
- www.stem.org.uk/rp782

RAISING ATTAINMENT IN TRIPLE SCIENCE

Looking to improve students' performance? Consider a range of key strategies to help you achieve this. It has been designed for science departments that have little or no experience in delivering triple science.

- Browse dates and venues online
- www.stem.org.uk/rp777

TRIPLE SCIENCE: BIOLOGY

Teachers who have experience of teaching biology at 14-16 will gain support in effective teaching and learning of the triple science extension modules. Explore a range of modules from across the awarding bodies.

- Browse dates and venues online
- www.stem.org.uk/rp780

TRIPLE SCIENCE: CHEMISTRY

Teachers who have experience of teaching chemistry at 14-16 will gain support in effective teaching and learning of the triple science extension modules. Explore a range of modules from across the awarding bodies.

- Browse dates and venues online
- www.stem.org.uk/rp779

TRIPLE SCIENCE: PHYSICS

Teachers who have experience of teaching physics at 14-16 will gain support in effective teaching and learning of the triple science extension modules. Explore a range of modules from across the awarding bodies.

- Browse dates and venues online
- www.stem.org.uk/rp778

TRIPLE SCIENCE: PREPARING FOR LINEAR ASSESSMENT

Go beyond looking at short term interventions to explore issues such as progression, tracking progress and how best to structure learning so students gain a deep, long term understanding of the science.

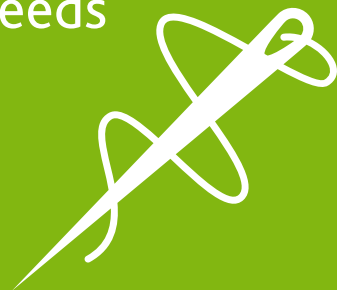
- Browse dates and venues online
- www.stem.org.uk/rp788

"I used some practicals at the 6th form open evening [and received] good feedback from staff, students and parents."

- Jane Dickens
Easingwold School

Technicians supporting chemistry 11 – 19

Bespoke CPD tailored to your needs



Our comprehensive range of support can be requested as a bespoke offer for your school or network. We can make the CPD more effective and tailored to the specific challenges and needs your school and college faces.

We have a proven track record of highly evaluated, impactful professional development and a wealth of experience in supporting teachers, technicians, and support staff in all aspects of STEM education.

- www.stem.org.uk/ms/bespoke-cpd

TECHNICIANS

INTENSIVE SUBJECT-SPECIFIC CPD Accommodation and meals included

PRACTICAL SKILLS FOR TEACHING ASSISTANTS

Science practical skills to support teaching assistants. Gain an overall understanding of the subject and enhance your confidence with students.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 13 November 2017 (2 days)
- www.stem.org.uk/ny626

SENIOR TECHNICIANS ACCREDITED CO-LEADERS IN SCIENCE (STACS)

Deliver an effective service, support engaging practical work, work with large numbers of colleagues and keep abreast of changes within the profession.

- Your school receives: £3,300 ENTHUSE Award
- Activity fee: £3,850 (ex VAT)
- 16 October 2017 (10 days)
- www.stem.org.uk/ny600

SKILLS FOR NEW TECHNICIANS

Suitable for those new to the role within a school or college, this CPD activity provides a thorough grounding in the science technician profession.

- Your school receives: £2,100 ENTHUSE Award
- Activity fee: £2,100 (ex VAT)
- 06 November 2017 (7 days)
- www.stem.org.uk/ny601

TECHNICIANS IN THE CLASSROOM

Examine and explore: what makes good practical work, working effectively with teachers and students, presentations and demonstrations, assisting with practical project work and managing small group work and individuals with practical activities.

- Your school receives: £900 ENTHUSE Award
- Activity fee: £900 (ex VAT)
- 11 December 2017 (3 days)
- www.stem.org.uk/ny602

TECHNICIANS SUPPORTING BIOLOGY: 11-16

Examine and explore: microbiology, biotechnology, genetics, dissections, ecology, microscopy and working with animals and plants.

- Your school receives: £900 ENTHUSE Award
- Activity fee: £900 (ex VAT)
- 20 September 2017 (3 days)
- www.stem.org.uk/ny604

TECHNICIANS SUPPORTING CHEMISTRY: 11-16

Examine and explore a range of practical activities which include micro-practicals, analytical techniques including chromatography, spectrometry and colorimetry, polymers, diffusion, electrolysis, distillations, titrations and demonstrations.

- Your school receives: £900 ENTHUSE Award
- Activity fee: £900 (ex VAT)
- 29 November 2017 (3 days)
- www.stem.org.uk/ny605

TECHNICIANS SUPPORTING PHYSICS: 11-16

Examine and explore electricity, electronics, sound, light, radioactivity, forces, heat transfer, space, astronomy and electromagnets.

- Your school receives: £900 ENTHUSE Award
- Activity fee: £900 (ex VAT)
- 20 November 2017 (3 days)
- www.stem.org.uk/ny606

TECHNICIANS SUPPORTING THE NEW DESIGN AND TECHNOLOGY GCSE

Explore the new resources, materials and equipment in the GCSE and how technicians can effectively help teachers and students with the final controlled assessments and other projects.

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 31 October 2017 (2 days)
- www.stem.org.uk/ny621

3D PRINTING FOR TECHNICIANS

Find out how to safely operate and maintain your 3D printer and fix those troublesome printing issues!

- Your school receives: £600 ENTHUSE Award
- Activity fee: £600 (ex VAT)
- 11 December 2017 (2 days)
- www.stem.org.uk/ny629

SENIOR TECHNICIANS: LEADERSHIP, TRAINING AND MANAGEMENT

Designed to enhance leadership and management skills, through examining the role of senior technicians, managing an effective technical service, creating and contacting local groups and training other technicians.

- Browse dates and venues online
- www.stem.org.uk/rp602

TECHNICIANS SUPPORTING A LEVEL BIOLOGY

Developed in collaboration with CLEAPSS, giving technicians an opportunity to learn skills and techniques specifically tailored to supporting advanced level biology.

- Browse dates and venues online
- www.stem.org.uk/rp603

TECHNICIANS SUPPORTING A LEVEL CHEMISTRY

Learn about the key skills and techniques required for the effective support of post-16 chemistry, in conjunction with CLEAPSS.

- Browse dates and venues online
- www.stem.org.uk/rp604

TECHNICIANS SUPPORTING A LEVEL PHYSICS

In collaboration with CLEAPSS we provide you with hands-on experience of a variety of apparatus and experiments, including new software and resources for supporting A level physics.

- Browse dates and venues online
- www.stem.org.uk/rp605

TECHNICIANS SUPPORTING PRACTICAL WORK IN THE CLASSROOM

Understand what makes good practical work, working effectively with teachers and students, assisting with practical project work, and managing small group work and individuals with practical activities.

- Browse dates and venues online
- www.stem.org.uk/rp600

TECHNICIANS SUPPORTING TRIPLE SCIENCE

This course is designed for technicians who support practical work in triple science. You will gain hands on experience of effective and engaging practical ideas in biology, chemistry and physics. You will also have the opportunity to discuss key learning points behind the practicals, where to find resource materials and how to prepare them.

- Browse dates and venues online
- www.stem.org.uk/rp776

WORKING AS A SCIENCE TECHNICIAN: AN INTRODUCTION TO THE ROLE

Understand the role of a technician, general health and safety, policies and procedures, technician skills and working in a science department.

- Browse dates and venues online
- www.stem.org.uk/rp601

ONLINE

MANAGING BEHAVIOUR FOR LEARNING

Transform your classroom by making small shifts in your own behaviour. Paul Dix, a leading voice in behaviour management in the UK and internationally, will help you learn how to positively influence the behaviour of your students through small shifts in your own behaviour.

- Browse dates and venues online
- www.stem.org.uk/ms/online-cpd

"I thoroughly enjoyed the course, great resources, relevant information, excellent delivery! Thank you!"

- Anita Webster

Managing behaviour for learning



New short online courses coming soon

Look out for our new suite of free online CPD to support practical work for 14-16 year olds in biology, chemistry and physics.

Discover how to make practical work relevant, explore how progression and assessment in practical work impacts on learning and investigate approaches to teaching practical science that can be applied to other topic areas.

- Check our online CPD page
- www.stem.org.uk/ms/online-cpd

Super-powered CPD

The impact of our CPD

97%

of participants thought the overall quality of CPD was either 'very good' or 'good'



97%

of participants found the content of CPD relevant and useful to their personal professional needs as well as the needs of their school or college



97%

of participants thought the CPD was good value for money



96%

of participants would recommend our CPD to a colleague



97%

of participants expect the CPD to further impact their future practice



Start your
journey today

www.stem.org.uk/ms/cpd