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Technology is integral to education today. Not only are computers commonplace in classrooms and colleges, technology dominates and defines the way in which we live, work and communicate. As a result, it's more important than ever before that children and teenagers are fluent when it comes to using technology and can hit the ground running when they eventually join the workforce.

Generation Z has grown up in the mobile age where apps and software breathe life into the tablets, desktops, laptops and many of the front-of-class touchscreens and whiteboards used in their classrooms. Although a clear majority of schools provide students with tablets and laptops that work within their chosen technology ecosystem, students in higher education tend to use their own devices (BYOD). Of course, this has caused a steep rise in the number of smartphones that are being used by students, particularly in secondary education, which has its own set of problems, but what it points to is a growing trend towards, smaller, faster, portable tech in education. Given the pace of



change, in a few short years' children might be wearing technology to school in place of uniforms!

Even the front-of-class view and physical position of teachers in a classroom is changing with the rise of classroom technology. Chalk boards, which were incumbent in every classroom for centuries, have metamorphosed in a mere 25+ years from white boards, to electronic whiteboards and projector systems, to the interactive touchscreens found in a growing number of classrooms today.

So how can schools and colleges stay ahead of the curve technologically speaking and where should they be investing their precious technology budgets in 2017?

Clevertouch has spoken to schools, technology manufacturers, journalists and reseller/integrators to answer many of the burning questions teachers have about the latest interactive technologies, creating a helpful buyer's guide covering all the devices used in education today.

### Find out more

The latest technology Buyer's Guide from Clevertouch is essential reading before BETT 2017. So, make sure you've got yours. Download your copy in time for BETT 2017 and check out what's happening on Clevertouch stand C288 during the show at [www.clevertouch.co.uk/bett](http://www.clevertouch.co.uk/bett)



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## Phones away – it's time to talk!



Welcome to another edition of Technology & Innovation magazine; in which, once again, we're looking to the Bett Show for inspiration. And really, why wouldn't we? According to the organisers this annual, highly anticipated event is one that aims to "bring together people, ideas, practices and technologies so that educators and learners can fulfil their potential" - which is a statement that pretty neatly sums up our mission, too.

Learning through, as well as about, technology has been something that's moved ever closer to the heart of what happens in schools over the past couple of decades, and exponentially so more recently. However, whilst there is largely a consensus that this is as it should be, given our inevitable evolution into an increasingly technology driven society, there are huge differences in the way it works in practice.

For example, in some schools, whipping out your mobile phone to record a science practical, or listen to music as you work through a set of maths exercises, is considered perfectly reasonable behaviour; in others, such choices are strictly limited to the playground - and in a few, the merest hint of a personal mobile device anywhere other than securely and silently zipped into a bag or pocket will result in serious sanctions for the hapless owner.

Is any of these policies inherently superior to the others? Well, it's doubtful that such an assertion could be robustly defended - and of course, until or unless there is a serious policy shift at Whitehall, it's by outcomes that all schools will ultimately be judged. The joy of Bett for me, therefore, is in how it offers a space in which practitioners from all kinds of settings can discuss the decisions they and their organisations have made about the use of edtech both in and out of the classroom, share their experiences and, perhaps, adjust and improve teaching and learning as a consequence.

Within these pages, you'll find contributions from all kinds of industry experts and educationalists - including many who are exhibiting or speaking at Bett 2017. None of them, I suspect, would claim to have discovered a magic bullet; but all are incredibly keen to reach out to teachers, and hear what they have to say in return. Let the conversations begin!

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# AGILE ICT

Richard Jones, managing director at Agile ICT, explains why schools can always trust the orange

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**T&I: How can schools be sure that their current IT supplier is meeting their needs effectively?**

RJ: T&I Probably the simplest test is, do you have to think about your IT infrastructure – or does it just work? School leaders are in a very difficult position as they are, first and foremost, educators, not technologists. The phrase “in the land of the blind the one eyed man is King” could have been coined for IT in schools. That said, most IT vendors make sharks look kind and supportive, so who can a school leader (with responsibility for the effective use of a shrinking budget) trust? ALL our business comes from the recommendation of other schools.

**What is it about Agile ICT’s approach that makes it so suited to the education sector?**

We like to demystify complex technologies so that the school leaders actually understand what they are buying, and why. We focus exclusively on schools – we turn business away from corporates or private individuals. We have one simple goal that aligns all our staff members’ thinking – Delight the Customer – this is a much higher hurdle than

simply meeting the terms of a contract. Our account managers do not have sales targets so there is no incentive to try and sell a product or solution to hit a target whether it is in the best interests of the school or not. We rapidly become a school’s trusted advisor, and our role is guiding them to the optimum decision.

**Tell us about the range of services you have to offer schools?**

We offer everything technology related that a school could want. We deliver all our solutions with our own full time staff, as this is the only way we can guarantee precision in execution and the quality of the end solution. We claim to be experts so we put our money where our mouth is – we engage on a fixed price basis and offer a full money back guarantee on everything we design and implement. No school has ever needed to avail themselves of that guarantee. We are the market leaders for hyperconvergence in schools and we see this as a real growth area over the coming years.

**What do you think are the top priorities for a school’s IT system, and how are you able to achieve those?**

IT in schools is an enabler – not an end in



itself. The most important thing is for the platform to be robust and stable. Next it must be fast – users, especially pupils, demand fast response times. Last but not least, it must be affordable. Schools are not large corporates with almost bottomless pits of money. Delivering solutions that meet these three often conflicting requirements centres on engineering prowess and execution. In the nine years since we entered the market we have earned a reputation for our systems being the most reliable and fastest yet offering the lowest total cost of ownership. We are not in the box shifting market; we look to establish long term relationships with our schools to help them extract the maximum value from their IT budget.

**Why should visitors to BETT 2017 come along to your stand?**

We are at the forefront of hyperconverged solutions – a new way to achieve a robust and resilient IT platform with failover protection at a much lower cost than has been possible in the past.

Ask yourself a simple question – do you care if your school is offline for two days if you have a server failure? If this matters to you, then you should come and talk to us. If not, but you would like a fresh perspective on your IT, then visit us anyway! Just look for the orange...



## 8

**F**or many years mobile phones were banned in the classroom, and in plenty of schools this is still the case. And while a lot of teachers and leaders are now starting to recognise the potential benefits of Bring Your Own Device (BYOD) practices, and becoming more lenient about the use of mobile phones and tablets in the classroom, social media is still very often the elephant in the room. We all know children are spending an enormous amount of time engaging with it, but many teachers still see social media as something that should exist outside of, and not encroach upon, the classroom environment. After all, it can be used as a platform for cyberbullying and has an indeterminate amount of unregulated and potentially inappropriate content. It's my belief, however, that this doesn't always outweigh the benefits – when managed properly – of embracing social media to enhance students' performance.

### Building a community

One benefit of schools using social media is its unique way of bringing people together and creating a sense of community. Pinner High School, where I am headteacher, is a brand new institution in North London that opened in September 2016. It was set up by other secondary schools in Harrow to meet a projected future need for school places. As a local resident with a keen interest in the project, I took up the post of headteacher

and set about trying to establish Pinner High School within the local community. Many secondary schools struggle to recapture the sense of community that is felt so warmly in good primary schools. Fewer parents gather at the school gate at pick-up time so there are few opportunities for them to share news and their views on the school, and to get involved in school life. Also, children's level of engagement with their parents tends to wane in the secondary school years, with endless recounting of what they did in the classroom being replaced by a nod and a shrug in response to the question: 'How was your day?' Social media is a free and effective way of remedying this; it can be used by schools to keep parents and students notified of upcoming school activities and news that will affect the children's schooling.

Additionally, opening a new school is very much about spreading the word: engaging people when there are not yet any parents, finding teachers when there are no existing colleagues, and creating a sense of community when all that stands is an empty building. As I have found, social media can also offer a solution to this challenge. With a weekly blog readership of 2,000, 300 applicants for the first 10 teaching posts, 12,000 Facebook views from two newspaper articles in one week, and a 20 per cent increase in student applications for 2017, Pinner High School has certainly used social media to great effect in this regard.

### New learning

But what about using social media directly to benefit students' learning? In my session at Bett, I will look at how things like creating a class 'Whatsapp' group to keep students informed and engaged with class activities, and sharing news, resources and discussion points via school Facebook and Twitter pages, can keep learning alive beyond the classroom. My interest in social media for schools began in frustration when I was head of Senior School at Dulwich College Beijing, China, where Facebook and Twitter were blocked. Dulwich College Beijing was named British International School of the Year at the same time that I extended the 1:1 laptop programme to include Years 8-13. I am an Apple Distinguished Educator, and spoke at the 2010 Beijing Learning Summit about school leaders modelling the working use of technology. Back then, my meeting agendas were wikis, but my newsletters were paper. Since then, I have had two daughters, who were both apparently born with the ability to swipe iPads and tap apps.

With technology evolving all the time, schools must keep up if they're going to be able to engage the younger generations in learning and school life. The technology the first sixth formers at Pinner High School will end up using probably hasn't even been invented yet, and the mindset of school leaders to embrace this change requires great creativity. With teenagers spending between six and nine hours per day on social media, according to the Common Sense Media report (Washington Post, November 2015), it's clear that fighting the tide of likes, follows and shares is futile. I believe that schools should embrace the clever use of social media to engage students, parents and teachers, rather than attempting the impossible – to shut it down completely.

"Many secondary schools struggle to recapture the sense of community that is felt so warmly in good primary schools"



**DON'T MISS THIS!**

**CHRIS WOOLF**

○ Chris Woolf, head teacher, Pinner High School  
'Like, Follow, Click – making the most of school social media'

Bett Learn Live: Secondary, 13.30  
Friday 27 January

# "How can we get to tomorrow sooner?"

It's innovators, not policy makers, who should be shaping education for the future, insists Professor **Stephen Heppell**

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One of the projects that I will be sharing at Bett is the Refugee School Project, supported by Unicef. This is a project designed to help displaced children initially from Syria to engage in shared 'Maker Activities' with children in schools elsewhere. This project asks schools and communities to design an activity that a small number of displaced children can interact with and enjoy from wherever they are currently living. This activity should allow you to compare and swap ideas and outcomes, learning a little bit about each other and also how to learn across cultural, geographical and political barriers.

Of course, none of this can happen without resources, which is why we ask participating schools and communities to fundraise, or to simply buy, these resources before sending out a box of components to their refugee pairs. The schools or communities decide what is needed for the shared activity, making sure they are able to provide it. It's been encouraging to see how creative schools and communities have been with the project, thinking of fun activities that their students and displaced children can collaborate on, such as designing a solar-powered hat with adjustable light to make it easier to read or walk in the dark; making a toy bear which can growl if moved and store heat energy for cold nights, and many more wonderful ideas to mash-up and make unique – anything goes!

## Better spaces

A second exciting and potentially transformational project is Learnometer, an Internet of Things and Big Data project launched in partnership with Jisc to make learning better by measuring and improving students' physical environments. We know that learning and results suffer when the physical environment is wrong; when rooms are too dark, too hot, too cold, too cramped and so on, children are less able to focus or achieve the best they can. I've visited a number of schools where students are stuck in classrooms with windows permanently shut and curtains permanently drawn, usually so that they can clearly see what is being projected onto the board at the front of the class. But what is this environment doing to young people's ability to learn? We've been researching this for more than two years now and have

measured, for example, the environment in over 50 examination rooms, all of which in some way or other are damaging to the prospects of the children taking exams inside. Temperature, light, air pressure, CO<sub>2</sub>, humidity, pollution, noise and other environmental factors all impact on the quality of learning.

Our little Learnometer research boxes allow us to find the answers to these questions, and to adjust our learning environments accordingly. A Learnometer is a unique combination of hardware sensors, software and cloud-based analysed data that helps to optimise learning environments. They automatically sample your learning environment, then make suggestions through unique algorithms as to what might be changed to allow students to learn and perform at their best. Cloud-based logging allows you to see, at a glance, how your environment looks, and lets you compare it with benchmark environments from across the school, the country and even the world – ever wondered how the environments your students learn in compare with those in China, Singapore, the USA, Finland and so on?

You can analyse general learning spaces, or specific areas like examination and test rooms (even bedrooms for homework), and the changes you make can be evaluated and compared, and then finessed over time. This all helps to level the playing field for learners in schools across the country; with pressure headaches being a common ailment cited by schoolchildren, and tiredness being another, it is clear that changes need to be made to the spaces they inhabit for six hours a day, five days a week, or longer. I guess that if learning were an Olympic event, we would all be a lot better at it!

## Something for everyone

Looking across the educational landscape, it appears to me that, faced with the opportunity to make learning better, half

## Meet the speaker

Professor Stephen Heppell is a leading world voice on the role of IT in learning. Stephen heads up his own policy, research and practice consultancy, which advises governments and national agencies around the world on the strategic development of IT. He is a passionate advocate of using the power of new and emerging technologies to continually improve education, forever looking towards the needs of the future generations of educators and learners.

At Bett 2017, he will be taking to the stage in the Bett Arena to share stories of some transformational bottom-up projects that are having a significant impact on the educational landscape of today – and of tomorrow.

of those in the world of education policy are saying 'how can we do what we did yesterday but cheaper?' whereas the other half are asking 'how can we get to tomorrow sooner?' The former approach to education policy seems to focus technology on making savings – adaptive testing rather than teachers, for example – whilst the latter approach seems to be reaching out for the things we could never do, or not measure, before.

But the history of BETT would suggest that technology can deliver fresh new approaches, alongside more affordable approaches. We can, in other words, have tomorrow sooner AND cheaper.

The projects I will be highlighting in my Arena talk (including by the way, a never ending masters degree with a monthly subscription but no fees) all show that the ingenuity of the BETT community, allied to some extraordinary new technologies, can exceed the often rather disappointing targets of our policy makers. That is quite a prospect; and it's set to be quite a decade.



**DON'T MISS THIS!**

PROFESSOR STEPHEN HEPPELL

○ 'Never Mind The Politics? Invigorating Stories Coming from the Classroom'

Bett Arena, 13.30  
January 26 2017

# Computational THINKING

The world needs a new set of core skills - and education is not attempting to address them, argues Jon McLoone

**W**hile modern technology has opened many educational opportunities and posed new practical challenges, it has also created a fundamental skills gap that has been largely overlooked. I'm not talking about the much-discussed need for coding skills, I am talking about 'Computational Thinking', which is farther reaching, both in concepts and applications.

One great technological shift has been the wholesale automation of computation, which has made computation applicable in places where, as little as a decade ago, it seemed irrelevant. When computation was limited to pencil-and-paper methods, only disciplines like physics and engineering could produce sufficiently isolated problems for simple computation to be useful. But now that automation can handle the complexity and scale of messy real-world problems, computation is finding use in an unprecedented range of disciplines across humanities as well as the sciences.

However, the chasm between the skills needed to wield this power and the skills we give to students is profound. Traditionally, maths has been the home to computation but our maths curriculum focuses almost entirely on teaching students to be the computer rather than to use one. It is still addressing a bottleneck in Computational Thinking that no longer exists.

## Four steps

So what is Computational Thinking if it isn't learning how to compute? Well I see it as the intelligent application of a four-step problem solving process:

You start by defining the question that you are looking to answer. Be precise about what you know, what you are going to assume and what you want to know.

The second step is an abstraction to a computable form. We have to align our problem with a conceptualisation for which there are useful computational tools. That

might be something mathematical like an equation or perhaps something from computer science like a database. We have to represent the essence of our knowledge and question, unambiguously, in a form that allows the computer to apply the computational tool that we have chosen to take us closer to our answer (solving that equation, applying machine learning to that database).

Step three is to perform the computation. That's the computer's job.

Finally, step four is to take the computed result and interpret it in terms of the original context. That is not just making sense of the result, but it is also validating the result and considering its limitations.

We might stop here or we might repeat the process with a more precise version of "how can I make my answer better?" Big, real-world problems involve iterating around this loop repeatedly refining results or answering side-questions until you converge on a useful answer.

## Real maths

So how does Computational Thinking relate to existing maths or coding curricula? Let's start with maths, the traditional home of computation. Generally maths classes completely skip step one and two. You are told the question precisely as you need to answer it, in an already abstract form, devoid of any context "solve the following equation", "find the integral of this expression" etc.

Where context is provided it comes in the form of simple word problems contrived to map directly to the intended hand-computation. All the time is spent on step three, since that is traditionally hard to do. When there is no context then the interpretation step can not have any depth and loses meaning, and the usual validation strategy is to "check your working".

It is the lack of context or application that puts many off maths, leaving them rightly asking "when will I use this?". But to be clear, I





am not arguing for more context to justify the value of hand-computation. The contextual connection between the concrete and abstract is the subject.

I have heard people argue that the aesthetic beauty of maths stems from its complete separation from the real world, and that its essence is the study of the abstract for its own sake. That isn't why maths was invented and it isn't why maths holds its privileged position, alongside English, at the centre of education.

The maths tools that have been developed over hundreds of years were invented to solve

problems faced in the real world. Computation is becoming so dominant outside of education because it now solves even more problems thanks to the power of computers. To me the real beauty is in seeing how mathematical concepts can be used to extract and represent the essence of the real world that you care about so that the same computational tools can be applied in completely different scenarios it isn't in the process of computation.

Even if you don't accept my aesthetic argument, the usefulness seems indisputable. In real jobs and everyday life you are rarely

asked "what is the maxima of this expression?" - you face questions like "how can we organise city streets better?". Computers trivialise the first case, but Computational Thinking is needed for the second.

## Connected code

So does coding fit with Computational Thinking? The ability to code is certainly a key skill for instructing the computer to perform exactly the computation that you intended. But coding alone is not Computational Thinking, it is just a means for expressing your computational thoughts, perhaps in the same way that being able to write a grammatically correct and clear sentence is not the same thing as writing an essay or story. A Computational Thinking subject should be designed to exercise open-ended creative coding just as much as developing games is. When you have a wide computational toolset and real-world problems, there is often more than one way to tackle the problem and many choices for simplifying assumptions giving ample opportunity for creativity.

If we accept this need to develop Computational Thinking skills, then we must address the practical question of how we do it. To be aware of the wide range of tools we surely need to define a new core subject, not just a tweak to an existing one. Our answer at ComputerBasedMaths.org has been to start with a reconceptualisation of maths based on the assumption that computers exist. But our aim is to build the anchor Computational Thinking school subject as we explicitly broaden our computer-based approach beyond being based in maths. We see a unifying core skill that cuts across subject boundaries just as reading and writing does. Computational thinking gives us a new objective way to address questions like "How does Shakespeare's language differ in his comedies from in his tragedies?", "What does satellite imagery tell us about changes to arctic ice coverage?", "Did Elizabeth I have better connected social networks than the Spanish monarchy?". Computational thinking should be modern outlet for uniquely human abilities of conceptualisation and creativity made possible standing on the cold machinery of computation.



## ABOUT THE AUTHOR

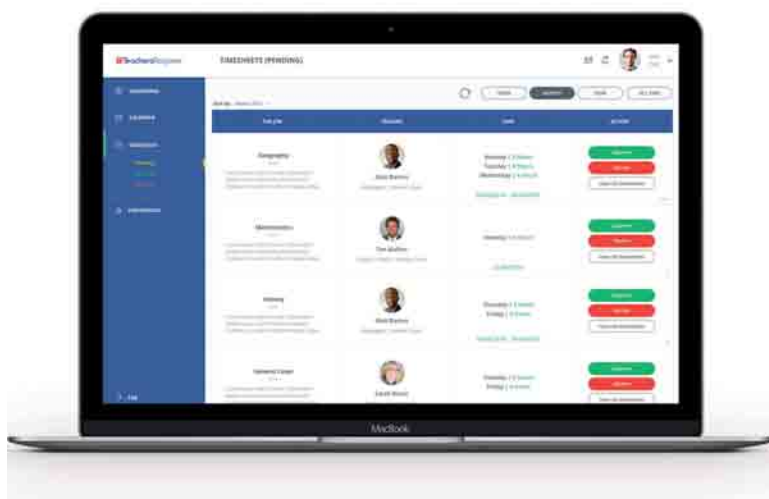


**Jon McLoone is co-founder of ComputerBasedMaths.org, an organisation that is redefining the maths curriculum so that it truly reflects today's real-world subject of maths.**

# TeachersRegister

Conor Powers explains how TeachersRegister is revolutionising the recruitment process for schools and teachers

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## How easy is it to sign up, and what is the process for pre-vetting and safeguarding supply candidates?

It's easy, teachers simply visit our website or download the app to sign up. When registered, they can upload all their vetting documents and create a profile with information about their subject, pay scale and availability. This means all their information is in one place and they don't have to send out their documents to numerous agencies. When we have their documents, we obtain both their references and only when this has been completed will they become live on the app. This means schools can only view teachers who have all their safeguarding checks completed, which ensures safety and reliability when hiring.

## How can you reassure users of the site that the data you hold are secure?

At TeachersRegister, our developers have a security first practice with everything that they do. TeachersRegister is audited by an external practice, by which we abide; whilst adhering to the industry best practices. We want all schools and teachers to know that we won't pass on any details to third parties.



## T&I: What are the problems schools tend to come up against when using traditional supply agencies?

CP: The use of recruitment agencies has become the norm when looking for supply teachers. The problem here is that schools are paying millions on supply with little going to the actual teacher. In fact, 2015 saw a whopping £1.3 billion spent on supply teachers, with £733 million of this being paid to agencies. Additionally, some agencies take short-cuts with safeguarding and teaching quality to make a deal, producing a level of risk when hiring agency staff. With the current teaching recruitment crisis, reliance on agencies is at a critical level. This is why we are offering an alternative.

## And why don't they necessarily work well for teachers, either?

Recruitment consultants don't see supply teachers as human beings, but rather a way

to make money. This means that a teacher has limited control over how much they will be paid, as their consultant will be bargaining with the school for the best rate. Furthermore, an unscrupulous consultant might put teachers forward for roles to which they aren't suited, just so they can make a deal. Misinformation and short-cuts are embodiments of recruitment agencies and these affect both teachers and schools alike.

## Why is TeachersRegister different?

TeachersRegister offers an innovative alternative to recruitment agencies. We provide a platform for teachers and schools to find each other without the use of a middleman. Schools and colleges registered with us will be able to search our pool of fully-vetted teachers and contact them directly through the Teachers Register app. Teachers will also be able to set their own pay rates without the agency markup on top. This will guarantee schools and teachers complete control over the process without interference from an agency.



# The Maths PROBLEM

Global Teacher Award finalist **Maarit Rossi** considers what it really means to be a 'world class' educator

**M**aths is sadly one of the most hated subjects in school, and I fear this is because it has never really been taught well. Indeed, maths teaching excellence is rather like the summit of Everest; in that only a very few teachers have reached it. But in my experience, this is so easy to change. I find it incredible that some people are talking about taking maths out of the curriculum – they see it as too theoretical, in much the same way as they view Latin. In my session at Bett, I will be sharing my thoughts on how teachers can work with their students to make maths fun and a thrill to understand. Once young people recognise the mathematical connections needed to solve problems, they become detectives in finding out the best way to get to the answer.

In Finland, teachers are given a lot more freedom to teach how they see fit because they are highly trained – to Masters degree level – before qualifying for the classroom. There is no testing or inspections in schools; teachers are trusted and given the freedom to apply the best practices as they deem appropriate. This freedom, based on a foundation of in-depth, high level training, has changed teachers' and students' perception of maths in Finland. When people ask me what happens to failing schools there, I simply reply, "We don't have failing schools". And it's true! Looking at the OECD's PISA research, it is clear that the difference between schools' performance levels is a lot less than in other countries.

Moreover, it is not only the highly qualified teachers that bring this success; parents in Finland are also very supportive and involved with their children's learning.

## A scientific approach

In my session at Bett, which is a panel discussion about 'what it means to be a world class teacher', I will be sharing my experiences of getting to the point where students want to learn maths and are more motivated to freely explore the opportunities the subject offers them. Because of the trust of the teachers I



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have worked with, I have had the opportunity to teach maths in Finland as a science; my students almost feel they are in a laboratory posing mathematical experiments, testing them out and coming up with the best solution to the problem.

I hope that delegates who come to take part in the debate will be interested to see how this problem solving approach is applied. Like the new curriculum in England, I will be talking

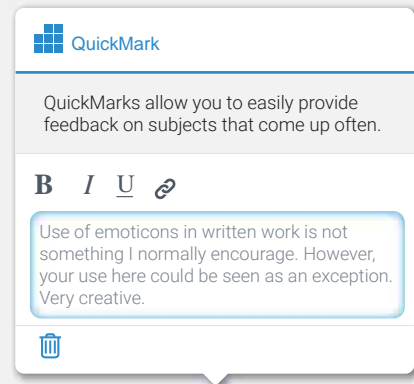
about how teaching in Finland has been based on problem solving for many years, ensuring students understand these connections so they can apply their learning to any question. Teachers can be too theoretical, in my opinion. Students need to find the solutions by working together to investigate the problem, and I will be giving examples of where this works particularly effectively.



**“DON'T MISS THIS!”**  
**MAARIT ROSSI**

○ Global Teachers winner and finalists  
'What does it take to become a world-class teacher?'

-----  
Bett Arena, 14.30  
Wednesday 25 January



Good work

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Ofsted has issued numerous reports on the importance of literacy, as well as teaching a broad and balanced curriculum, to students in secondary schools. Turnitin contends that modern literacy must include being able to navigate the deluge of information on the internet, if we want students to be fully empowered learners. Whether you call this digital literacy, media literacy, information literacy, or broaden the definition of literacy, it's essential to teach students the skills to be savvy users of online information.

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- 1 **Is the source objective?** What motivations might the author or affiliated organisation have?
- 2 **Is the content original?** Can you recognise the 10 types of plagiarism?
- 3 **Is the information current and comprehensive?** Does the content include multiple viewpoints with verifiable facts? Could the information be outdated?
- 4 **Is the site legitimate?** Be wary of sites trying to get your click. If a headline seems outrageous, it probably is. Check out Factcheck.org or Snopes.com, and look for a blue tick on social media sites to make sure sites are verified.
- 5 **Can you detect bias in yourself and others?** Almost all information has embedded bias, but reliable sources include evidence and present a range of opinions. Take the time to dig deeper than the first few search engine results, and think for yourself before forming an opinion.



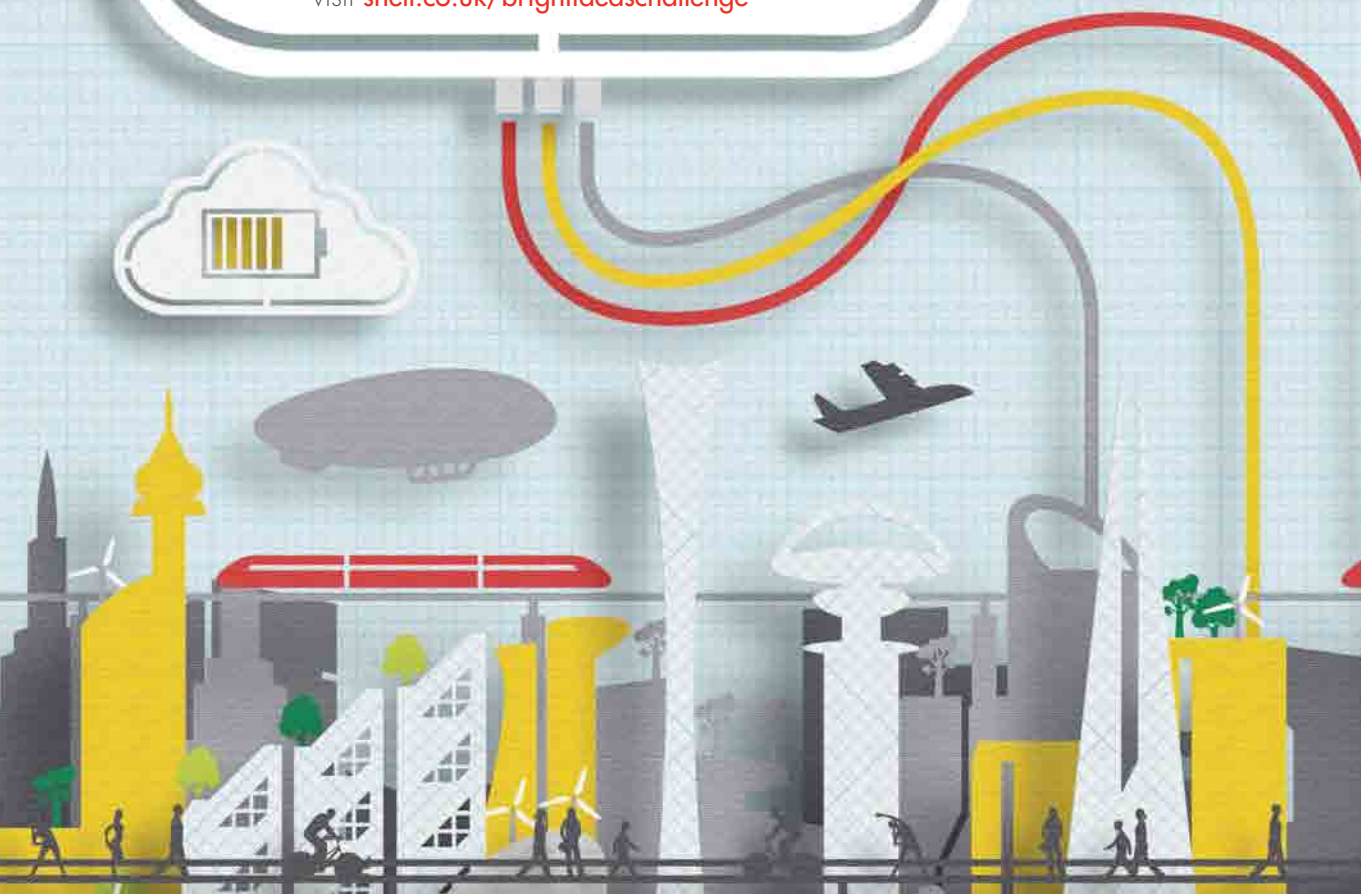
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# THE BRIGHT IDEAS CHALLENGE

**What will  
cities look like  
in 2050 – how will they  
be powered to be vibrant, healthy  
and clean places for people to live?**

We're looking for students' bright ideas to power cities of the future. To find out more, including how your school could win up to £5,000 visit [shell.co.uk/brightideaschallenge](http://shell.co.uk/brightideaschallenge)



## Teacher Information

At Shell we're committed to inspiring the next generation of scientists and engineers. That's why we run The Bright Ideas Challenge – our cross-curricular schools competition. It invites secondary students across Great Britain, aged 11-14, to imagine creative solutions to power cities of the future. We've developed a suite of resources to support your teaching and spark students' imaginations, including a step-by-step Teacher Toolkit, Student Workbook, mini videos and more. You can download the resources and find out more about the prizes online. Full terms and conditions apply.

See [www.shell.co.uk/brightideaschallenge](http://www.shell.co.uk/brightideaschallenge)



# THE BRIGHT IDEAS CHALLENGE

Jump into the future to inspire your students today



The Bright Ideas Challenge, Shell's exciting future cities STEM competition, is now open for its second year.

It's predicted that by 2050 another two billion people will live on earth and two in three people will live in a city. As populations grow and living standards rise energy demand is set to increase by around 50%. The Bright Ideas Challenge invites students aged 11-14 to use their STEM skills to come up with 'bright ideas' to power future cities, ensuring they are vibrant, healthy and clean places to live. The best entry will win £5,000 to supercharge the STEM experience at their school!

T&I had a chat with Christina Astin, co-founder of the Young Scientists Journal and judge for the competition, to find out a bit more about it, including what the judges will be looking for this year...

**T&I: Christina – there seem to be a huge range of STEM based schools challenges out there at the moment. What makes The Bright Ideas Challenge different?**

CA: You're right there are a lot of resources and competitions available to schools. Challenges are a great way of motivating future scientists and engineers and it's great to see so many high quality programmes out there.

But there are two things for me that make The Bright Ideas Challenge different. The first is that it motivates students to work together in a team, each contributing their own skills and demonstrating how collaboration can help solve real-world problems. The second

is that the competition encourages young people who don't think of themselves as science or engineering 'types' to get involved and think, "I might be a scientist or engineer after all".

**What makes it possible for busy teachers to get involved in a competition like this?**

I know as a science teacher just how busy life can be in schools and so it's really important that there are plenty of 'ready to go' resources that are curriculum linked. Last year's supporting video, teacher guide and student workbook certainly seemed to spark imaginations, and this year there are new resources – including additional videos and a classroom presentation.

Students can demonstrate a number of skills across a range of core subjects including geography, English and computing, which means that the competition can be delivered in a single subject or across multiple lessons.

There's flexibility too in when you choose to deliver the challenge. It was clear in last year's judging process that some schools had delivered the competition in normal lesson time, whilst others had delivered it during STEM clubs.

**What impressed you most about last year's entries?**

My fellow judges and I were all impressed by the range of schools that entered. It showed that The Bright Ideas Challenge appeals and is accessible to all schools.

I think we were also blown away by

the commitment and creativity shown by the young people who had entered. Many teams brought their ideas to life using extra materials, like videos, drawings and prototypes. It's optional to create that sort of thing, but some were so captivating that they really did propel our imaginations into 2050!

**There are 12 prizes of £1,500 and a total of £5,000 for the national winning school. Can you give us a few tips on what the judges will be looking for?**

Whilst we are looking for innovative thinking and creativity, this is first and foremost a STEM challenge. And although we're looking for radical 'blue sky' ideas, the winning solutions will be those that are also well researched and have real scientific grounding.

This competition also champions teamwork so we'll be looking for teams who have played to the individual strengths of everyone in the team – just as project teams do in the workplace.

**Finally, what would you say to any teacher reading this?**

I'd say go for it! If you've got creative problem solvers in your class, then you've got a good shot at winning up to £5,000 to super-size the STEM learning and inspiration at your school.

**Find out more**

To find out more about The Bright Ideas Challenge and to download the free resources go to [www.shell.co.uk/brightideaschallenge](http://www.shell.co.uk/brightideaschallenge)

# YES, YOU!

Anna Haslam asks how we can start to shift the 'not for me' perspective when it comes to STEM subjects

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If you ran a poll asking your students if they see themselves working in science or engineering, how many would raise their hand?

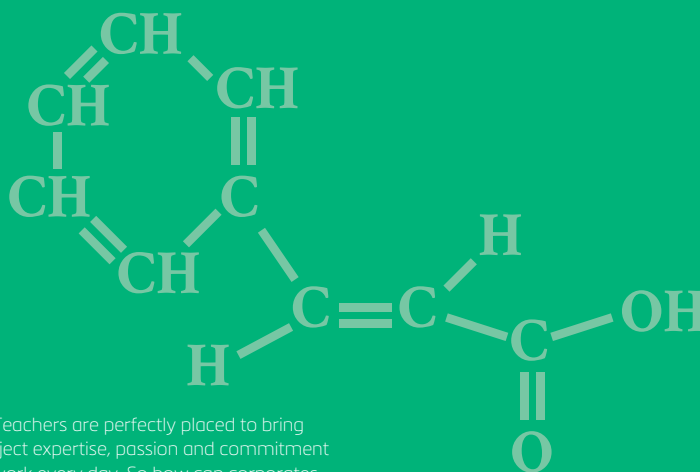
It's safe to say that educators and STEM companies across the world – from energy and medicine to cosmetics and aerospace – dream of a sea of hands shooting up in response. But research into young people's attitudes shows that most students simply don't identify with STEM careers.

Much of the problem is due to the plethora of myths about science and engineering. It's hard to deny that scientists and engineers have revolutionised our world. They've cured diseases, transformed communications and sent mankind to the depths of the oceans and into space. But when the Institute of Engineering and Technology (IET) surveyed 11-14 year olds about engineering perceptions only a quarter (23%) saw it as "exciting", just 21% associated it with "making a difference" and only one in seven (14%) viewed it as "modern".

In light of the avalanche of misconceptions that hinders STEM progression it's not surprising that only one in 11 UK students leave secondary school with an A-Level in maths and physics. In fact, research commissioned by the Your Life Campaign (supported by Shell) found that engagement with maths and science falls by 74% among girls and 56% among boys during secondary school.

### How companies can help

The demand for STEM skills is huge – by 2030, seven million jobs in the UK will be in science-based industries. Yet the UK has an annual shortfall of 69,000 engineering graduates and technicians. These statistics are a big challenge for STEM companies, as well as the UK economy, which depends on engineering for 24% of gross value added.



Teachers are perfectly placed to bring subject expertise, passion and commitment to work every day. So how can corporates help? I believe our strength lies in helping teachers tackle these STEM myths. We can showcase the inspiring scientists that work for us and tell stories about the real people behind the job titles.

We can also help busy teachers package STEM up so it appeals to a diverse set of students. Research for the Department for Business, Energy and Industrial Strategy suggests that "enjoying" a subject could be more influential than ability when it comes to students' subject choices. IET research reveals that 56% of young people enjoy drawing and designing things, 51% enjoy making or building things and 32% enjoy video editing. Using different tools and approaches in the classroom can help teachers reach those students who don't typically identify with STEM. When teachers are too busy to prepare new materials or weave them into the curriculum, corporate-sponsored STEM programmes can help.

One example from Shell is The Bright Ideas Challenge, which recently launched for a second year. This competition invites students aged 11-14 to devise innovative solutions to power cities of the future. Teams not only have the opportunity to take part in hands-on engineering activities, but are also encouraged to bring their bright ideas to life using prototypes, technical drawings, videos and a whole host of other mediums they naturally enjoy using. The competition helps teachers deliver the curriculum in a fun and engaging way and helps students recognise the power of science and engineering to solve real-world problems.

### Exciting opportunities

Facilitated workshops, where students can get hands-on with exciting kit or meet engineering role models, are another way companies can help schools. Tomorrow's Engineers offers free STEM career workshops across Great Britain, alongside online careers resources. Shell is a key supporter of Tomorrow's Engineers, with our joint programme – The Energy Quest –

seeking to engage up to 70,000 students by the end of the year.

Events like the Big Bang Fair, one of the UK's largest STEM events, are another key way to inspire young people. Since we first started supporting the Fair we've seen it grow in popularity, with tens of thousands of students filling the vast NEC halls to explore countless stands showcasing the latest in science and engineering. The demand for out-of-classroom inspiration is also being met by exciting new festivals, such as Make the Future Live, Shell's four-day festival of ideas and innovation, which will take place in London this May. Last year we hosted over 6,000 school students and this year schools will have another opportunity to explore how the world uses and creates energy in everyday life, taking part in hands-on activities, interactive science shows and careers experiences.

There are few other careers in the world that enable someone to be at the very forefront of change, to invent and create things that could shape a more positive future for everyone. It's engineers and scientists who are solving some of the world's most pressing and contemporary problems, from tackling climate change to developing cutting-edge technologies that are revolutionising how we live, work and play.

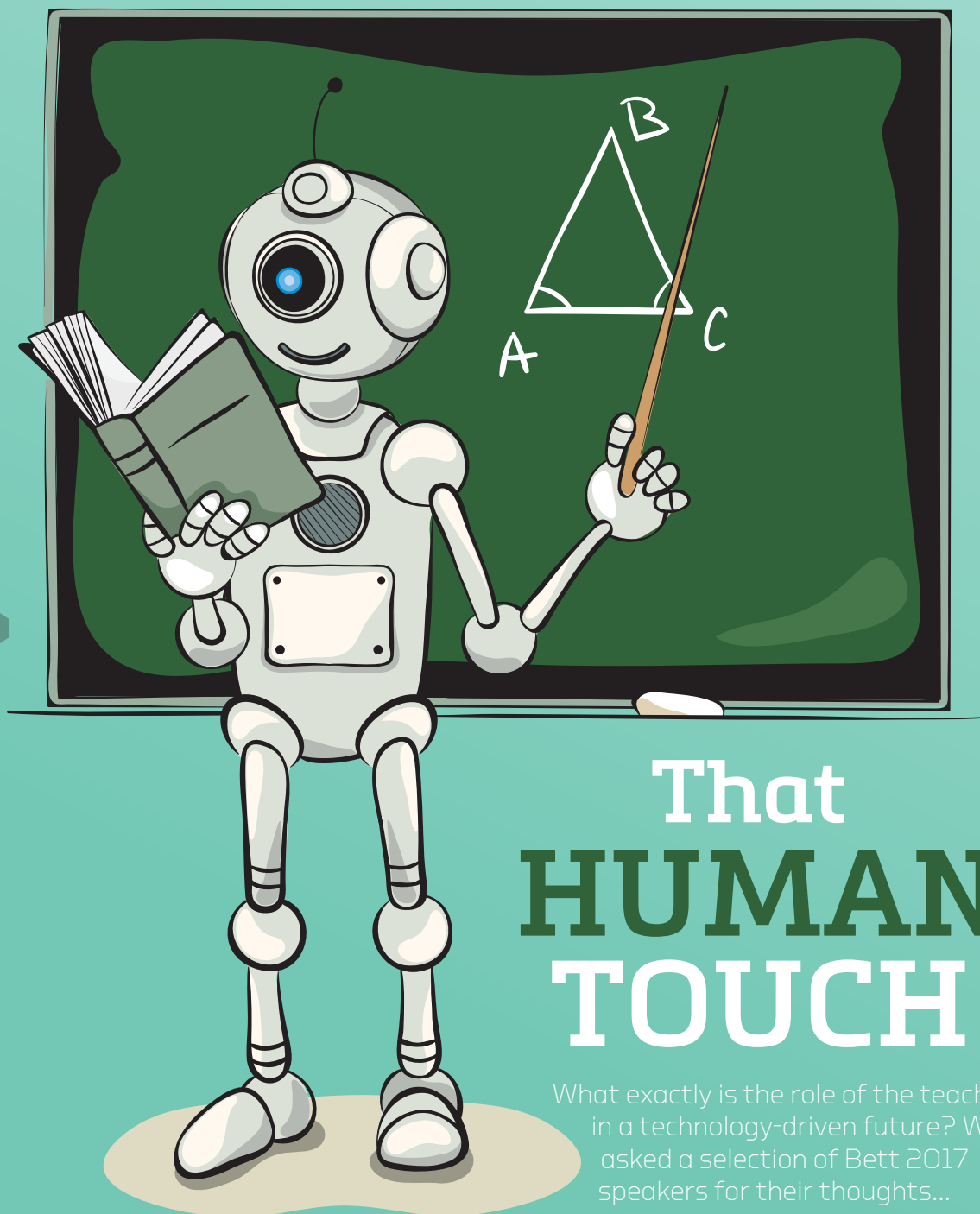
STEM talent exists in abundance among our young people. In the UK we're fortunate to have some of the best STEM teachers in the world. And we have an increasing body of companies willing to invest time and money to inspire the next generation of scientists and engineers.



### ABOUT THE AUTHOR



**Anna Haslam is head of UK social investment, Shell**



# That **HUMAN** TOUCH

What exactly is the role of the teacher in a technology-driven future? We asked a selection of Bett 2017 speakers for their thoughts...



## Laura White, head of digital learning, St Catherine's, Bramley



"I think the role of the teacher becomes even more important in a technology immersed future. It's our role to equip students with the skills to find and make meaning for their lives in a

fast changing world. Our students will have lives very different to our imaginings and a good education should enable them to think, make ethical decisions and develop a mind-set of critical engagement with technology. We need to encourage our students to go deeper than the shiny surface, to resist the temptation to simply consume technology and to instead create, combine and innovate."

## Chris Woolf, headteacher, Pinner High School



"Acquiring a body of knowledge, the cultural capital required to be an active contributor to society, is important for any young person's life chances. But in a technology-driven

future, the location of that body of knowledge must be up for discussion. Perhaps the skills to find information will be as important as the information itself. Locating, absorbing, interpreting, reformatting, sharing, synthesising, as well as learning information, will require new skills from teachers as well as students. The very skill of learning itself, and what it means to 'know' something, is not clear. It is an exciting time to be in schools. This changes the shape, style and substance of teaching in ways that we do not yet know. It places more emphasis on flexibility, collaboration, open-mindedness: all part of the Pinner High School values that underpin all that happens at our school."

## Sachin Choithramani, learning leader for digital technologies, Steyning Grammar School



"If we are to ensure the success of every learner, then we first need to help students understand the destination they are heading for. Second, we need them to measure the distance between where

they are now and where they want to be. Third, we need to support them in plotting the route ahead and to identify the obstacles they may encounter. Finally, we need to provide them with the support and guidance they need to travel on this road and realise their potential.

The role of the teacher has changed little in this respect despite the changes in technology; whereas once teachers will have enabled this

navigation by the stars, we spent much of the last century using more accurate maps. As we moved into the twenty-first century, we used specialist GPS devices known as SatNavs, but today we use far more accurate smartphones which triangulate our location using WiFi, mobile phone masts and GPS. Technology pinpoints our location and gives us the choice of the quickest, shortest or most scenic route to get to that final destination.

Technology hasn't changed the role of the teacher, it's expanded our toolkit and it's enabled a level of personalised learning that would have once been impossible. As our students travel on this road, not only can we can improve the quality of the feedback we provide, but we can do it much more efficiently, and we can do it in innovative ways that secure their engagement. Our students no longer navigate by the stars, they are reaching for them."

## Mika Rantala, head of school, Schildt Upper Secondary School



"The latest research tells us that one of the biggest factors of good and efficient learning is a teacher who builds a solid and positive student-teacher relationship in the classroom. When

students know they can trust a teacher, and when they also know that a teacher will treat them as a human being, rather than a human doing, good learning will happen.

Teachers need to understand the role of technology in teaching and learning. Technology is a "good servant but a bad master". This means that people are what matters, and if technology is used to help teachers and learners to achieve the best learning results they can, it should be used. However, if the same results can be gained in more traditional methods, teachers should not be discouraged from using them. The decision is one for teachers to make; teachers are the best experts of pedagogy. Best educational results happen when traditional pedagogy is wisely combined with new technology and innovative pedagogical approaches."

## Jon Tait, deputy headteacher, Acklam Grange School



"As modern and connected educators, we need to embrace technology because we are teaching the digital natives. These children have the knowledge and skills to communicate and

collaborate with other children across the globe, designing and constructing complex structures, habitats and civilisations – ask any parent who's got children who play Minecraft and they'll certainly agree.

It's our job to see this digital evolution as an exciting time and to utilise these freely

accessible technologies to enable the children in our care to have the very best opportunities for awe and wonder in our classrooms every day, empowering them to achieve far greater things than we could have ever have imagined as children ourselves. It begs the question, what are you doing tomorrow in your classroom, that couldn't have been done 20 years ago?"

## Ben Benjeddi, ICT teacher, Alec Hunter Academy



"If companies are the creators of technology, then teachers are the facilitators. Teachers are absolutely vital in lighting up the path for the next generation of students over the plethora of technology

that is on offer. Although they may lack time and training, most teachers always challenge software and hardware designers to create technology that is user-friendly and easy to set up, and – before I forget – the cost is also a good decider."

## Andy Carpenter, deputy headteacher (pedagogy and performance), Plymouth School of Creative Arts



"Until technology de-industrialises schooling by making 'factory schools' (as Anthony Seldon has called them) obsolete as society's default means of providing universal education, the role

of the teacher will remain the same as it has been since schooling was industrialised in the 19th Century.

De-industrialisation will begin (has begun?) to happen with the advent of competence based adaptive learning systems which can create learning opportunities and pathways that are individualised to each person's circumstances, needs, wants, aims and ambitions, and genuinely affect learning. At that time 'factory schools' will begin to (re) evolve into 'learning villages', places where people, of all ages, gather for the love of learning together, for social interaction, for shared cultural experiences – all facilitated by teachers who have permission, opportunity, and crucially, time, to engage one-to-one with every learner.

The role of teacher in a technology-driven future will therefore be fabulous, being at various times: a mentor, a counsellor, a coach who shares in, and contributes to, every learner's journey to personal fulfilment by helping them to develop high level skills such as curiosity, creativity, collaboration, composure, communication, critical thinking, compassion and citizenship and, above all, a love of learning. Bring on the revolution!"

# LIGHTING UP THE FUTURE OF EDUCATION PUBLISHING

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# ONWARDS AND UPWARDS

How the Parker E-ACT Academy went from failing to flying



25



This summer, Daventry's Parker E-ACT Academy pulled in its best ever set of exam results with 55% of its students achieving five grade A\* - Cs and its principal Andrew Mackereth is resolute

that the academy will become Daventry's next outstanding school: no small feat for an academy which only two years ago was placed in special measures.

In 2013, the former struggling William Parker School in Daventry was converted into an academy and became part of the E-ACT Multi Academy Trust.

"When I arrived the academy had been in special measures for six months and things were far from great," recalls Andrew. "It was clear to me that the school and everyone in it needed a complete change of mind set if we were to turn things around."

Whilst building belief and a sense of 'feel good' was an important part of the academy's recovery, Andrew knew that change had to go much further than that, and he spent a great deal of time examining the teaching. By empowering the existing teachers and instilling

confidence in their ability, he believed this would liberate their approach and create an openness to change.

"Our students were criticised for lacking any sense of responsibility for their own learning. We know that in order to help our students to develop as fully rounded individuals and become the best they can be, we owe it to them to foster their own independent learning skills," he points out.

## Equal access

Whilst Andrew and his team take charge of the day to day running of the school, The Parker Academy is part of a wider supportive Multi Academy Trust. As part of the Trust's ongoing commitment to providing every student, regardless of location and background access to the same opportunities, E-ACT became the first multi academy trust in the UK to subscribe to GCSEPod across its entire secondary estate, providing 9,500 students with access to the award winning content.

"I could immediately see how GCSEPod could work for us and how it would benefit our students and help us to encourage a greater sense of responsibility for their own

learning," adds Andrew. "We use it in the main as an independent learning tool but I am working closely with the teaching staff - even those who shy away from technology - to encourage them to make it part of everyday learning. Some teachers use it to set assignments whilst others simply gently remind students to refer to GCSEPod on their phones and mobile devices whenever they have a spare few minutes to recap on things they have learnt in the classroom or to prepare for upcoming topics.

"We introduced GCSEPod relatively late in the academic year and I was a little anxious that it was perhaps too late to benefit the then Year 11 students. However, with 10,000 downloads within a six month period and our best set of exam results ever, I needn't have worried. And the data shows that there was most certainly a direct correlation between students who engaged in independent learning through GCSEPod and the progress they made.

"So whilst we still have some way to go, we are built on strong foundations and all share the same belief that we can be great, which I think prepares us fully for the future."

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We decided to bring PET-Xi in to support our improvement. Measures show considerable improvement in 2016, results were strong and the school is showing rapid improvement in outcomes. PET-Xi was a significant part of our strategy to help achieve this.

**Dan Roberts**

Assistant Head Teacher (Student Achievement)  
Coleridge Community College, Cambridge



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# CASE STUDY: COLERIDGE COMMUNITY COLLEGE

When a new SLT found itself responsible for raising standards and confidence at a struggling academy in Cambridge, it turned to an outside provider for support



Coleridge Community College in central Cambridge is a member of Parkside Federation Academies, a multi-academy trust with approximately

550 students aged 11-16. Ofsted graded Coleridge as 'Requires Improvement' in the Spring Term 2015, which was followed by disappointing 2015 examination results.

A new head teacher was appointed in September 2015, along with an additional assistant head teacher, Dan Roberts (pictured above), with responsibilities for raising levels of student progress and achievement, as well as closing the gap between vulnerable groups (disadvantaged/SEND) and their peers.

"On the back of the 2015 Ofsted report and the 2015 examination results, it was clear we needed a different approach to our Pupil Premium spending", says Dan. "One of my first actions was to overhaul the Pupil Premium spending plan and focus our attention on targeted, evidenced-based projects that could make a difference to our results.

"As part of that review I attended the National Pupil Premium conference where I came across PET-Xi. Having looked into the impact they had made at several schools which had won Pupil Premium Awards, we decided to trial two of their topic focus days, one for maths and one for English, to see if the method could work for us. The feedback from our students was very positive, including their confidence test scores, so we decided to bring PET-Xi in again to support our improvement plan and target pupil premium students across a range of subjects."

## Progress and confidence

To support Progress 8 outcomes, Coleridge elected to run topic focus revision days across all the key English Baccalaureate subjects: English, maths, science, geography, history and French. "The strategy was very much focused on securing Progress 8/ Attainment 8/EBacc/Higher Pass in English and maths outcomes as these are the new performance measures Ofsted use to evaluate school performance," explains

## Get with the programme

PET-Xi works with hundreds of schools across the UK providing intensive, immersive and inspirational interventions delivering a positive impact on learner progress and results. Programmes are designed to give learners confidence to answer examination questions, identifying exactly what each question is asking, how long to spend on each question and which skills to use to answer questions successfully. They can be delivered early in the school year for maximum impact and development or to have a final impact before exams to improve grade results.

Schools seeking to improve progress and attainment with evidence of results can contact PET-Xi at **024 7642 0310** or by email at **info@pet-xi.co.uk**

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Attainment and Progress at Coleridge Community College			
	Pupils eligible for PP in the school 2016 Result (2015 in brackets)	Pupils not eligible for PP in the school 2016 Result (2015 in brackets)	Pupils not eligible for PP (2015 national averages)
Progress 8	+0 (-0.7)	+0.1 (-0.2)	0
Attainment 8	4.2 (3.2)	4.9 (4.2)	5.1
Higher Pass in English and Maths	44.4% (25.8%)	62% (45%)	58%
EBacc	11.1% (6.5%)	30% (18%)	24%

### Within-school Commentary on Closing the Gap

- The Progress 8 of FSME6 students is significantly better than in 2015, with a 0.7 improvement in 2016. Equally, the gap between these students and their peers has shrunk from -0.5 to -0.1
- The Attainment 8 of FSME6 students is significantly better than in 2015, with an average 1 grade improvement in 2016. Equally, the gap between these students and their peers has shrunk from -1 to -0.7
- The Higher Pass rates in English and Maths of FSME6 students is significantly better than in 2015, with a 18.6% improvement in 2016
- The EBacc outcomes for FSME6 students are better than in 2015, with an 4.6% improvement in 2016

Dan Roberts. "These measures show considerable improvement in 2016 when our results were strong and indicate that the school is showing rapid improvement in outcomes. PET-Xi was a significant part of our strategy to help achieve this. We have been impressed with the quality of staff that PET-Xi provided and the impact they had on our revision plans."

The way PET-Xi works (with a lead motivator, a subject specialist and a couple of assistants acting as 'champions' for the students) means that the contact ratio with students is high. Less confident students have a 'voice' because the assistants are sitting with them and asking questions from their point of view.

"Most students commented on the fact that they had more confidence after the day's course," confirms Dan. "They take that sort of boost away with them and into their other lessons of course. The challenge now is to sustain these results over time and continue to raise the levels of progress and attainment."

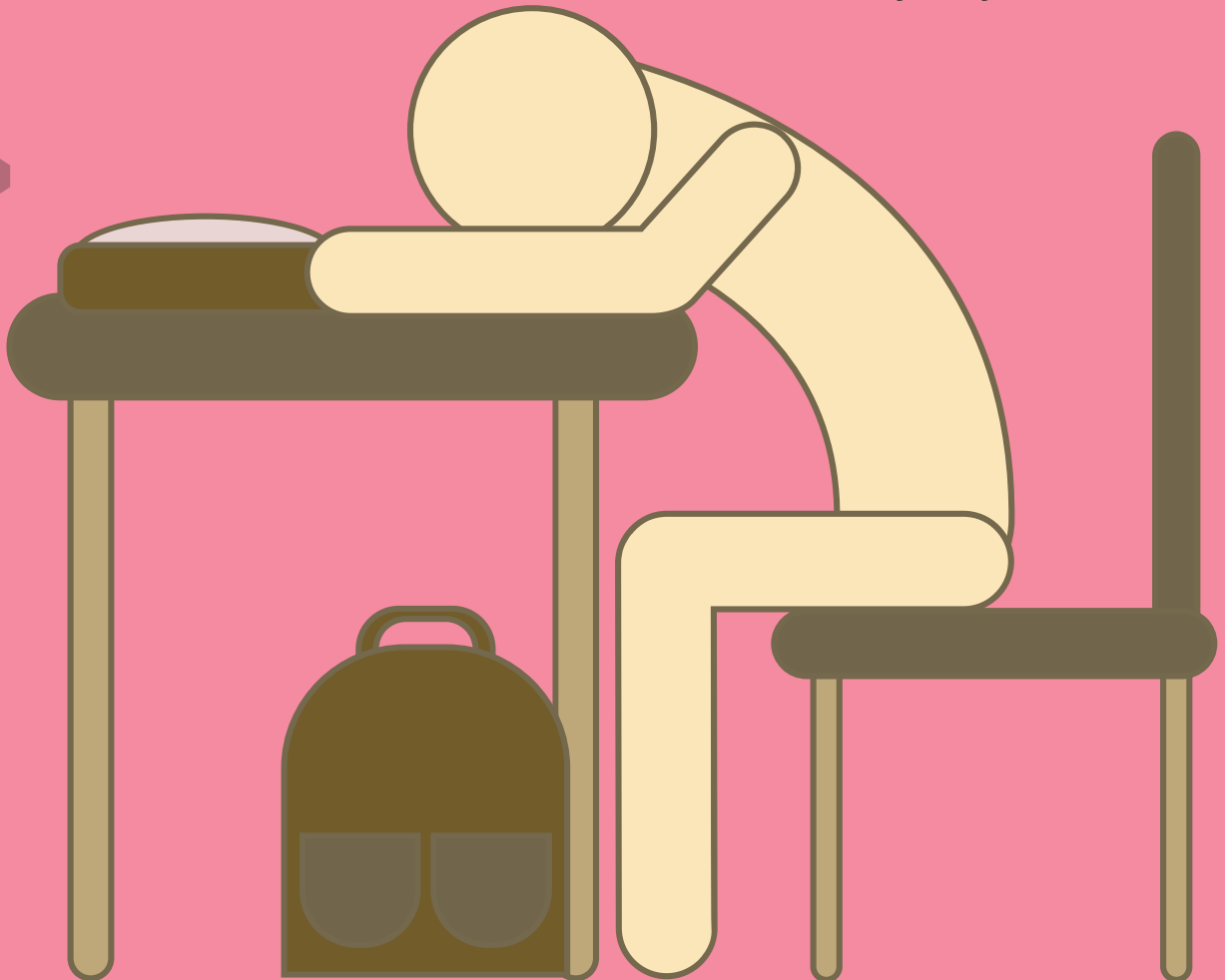
# WAKE UP CALL

One of technology's greatest strengths is the way it can get disengaged students interested in learning again, says **Fleur Sexton**

**T**echnology is proving to be a fabulous disruptor in education – improving student learning, teacher effectiveness and school efficiency.

Today's school children and students are the first generation of true 'digital natives' who spend most of their free time online messaging friends and playing games. This familiarity with technology, and given that our classrooms are now rich in digital aids, makes it easier to reach learners in the space they occupy, i.e. on their terms. The technology can really help students take ownership of learning ideas because they are in their language.

It provides an additional route to understanding while blending in well with traditional approaches – basically enabling multi-mode learning, because the same message can be given via different channels.



This offers teachers a wonderful opportunity to transform the learning of those pupils who have lost their way and become disengaged from their education.

In some cases students become disengaged learners because they have not found their own particular learning style road, or have for whatever reason missed out on the fundamental points of a subject and are consequently unable to follow enough of the subsequent course to remain engaged.

Whatever the cause, supporting disaffected young people is not easy and schools need effective and consistent strategies to re-engage pupils, maintain their progress and instil a sense of hope and aspiration for their futures. Technology can be a powerful tool here.

Integrating technology in education can definitely help to re-engage students – or even help ensure that they don't disengage in the first place. Because today's young people love technology, they are sure to be interested in learning if they can use the same equipment in school they use out of school – their phones, computers and iPads. The technology helps to take the fear out of learning because it is a platform with which they already feel at ease.

So it's vital that schools invest in technology and develop strategies which truly engage their students.

## Explore and excite

There has been a lot in the news recently about using Minecraft in the classroom, following the launch of the Minecraft Education Edition of this popular computer game. I can see exactly why this would work – because using technology moves the focus away from the learning (which may have previously bored the student) and directs it instead towards the more exciting area of 'exploration'.

Integrating technology into the classroom is also a great way to address diversity in learning styles. Working with children to overcome their barriers to learning and development involves trying all sorts of different approaches to teaching – with a kinaesthetic style often most successful for the disengaged learners who don't like listening to or following orders, but who learn best when doing something physical or practical.

Technology also allows better opportunities for interaction between classmates by encouraging collaboration. Some fun ideas to try include using QR codes on wall displays or worksheets which students can scan into their smartphones

## Technology can help engage learners because it supports:

- 'Binge' consumption of content.
- A 'playlist' mentality – courses can encompass a variety of learning experiences and content, such as videos, documents, and instructor-led classes.
- Content 'mining' – users can easily search for a video or other forms of content, and 'workday learning' will eventually provide smart content suggestions over time, based on users' preferences and past activity.
- Content 'snacking' – users can learn by viewing short videos and content.
- Content sharing – users can create short videos on specific topics and upload the content for consumption by peers/other users.

and then get directed to further media such as videos relating to the subject they are studying.

Augmented reality (AR) takes this a stage further. Using a camera device, this technology allows students to superimpose objects onto the screen (as Pokémon GO does) so that for example, the Eiffel tower can appear on the screen of a student reading about its origin. This can also be used as a teaching tool, where a webcam reads a card held by the teacher and the display on the card changes – so that, say, an image of Planet Earth can then be manipulated into the different elements of crust, mantle etc.

Following on from this, the current 'big thing' is virtual reality (VR) – imagine the excitement of students who can put on glasses which then 'transport' them inside a cell during their biology lesson, rather than just drawing and labelling a picture!

## Game on

Gamification is another important area. This is the concept of applying game mechanics and design techniques to engage and motivate learners to achieve their goals. It combines the fun and most enjoyable aspects of gaming with instruction, practice and feedback to encourage learners to become more engaged in the learning process. Gamification is about more than making lessons 'fun' – though this is a common perception. It's more accurate to say that gamification is about engagement. It works largely by providing instant feedback – quickly rewarding even the smallest level of progress.

At a less complicated level, phone apps are also coming into their own. Rather than going to a library or sitting at home with textbooks, students can use their tablets or smart phones to download apps which will help them to learn and to revise. Because the information is on a portable device, students can work anywhere, anytime, including when they are on the go, so that they can even put their commuting time to good use.

Many such apps are free or low-cost, so using technology doesn't always need to involve expense. Just look at YouTube, which has masses of free content which can be used to capture students' interest and help them flesh out topic areas.

Less obviously, a classroom feedback system, also known as a classroom response system, can be a huge help in building pupil confidence. This involves technology that promotes and implements active and cooperative learning methods. Typically pupils will be equipped with a device, like a hand-held 'clicker', which allows them to participate in quizzes, to vote, to answer questions and to self assess, with the results and answers being displayed in real time on a screen. Students can sometimes participate using other devices, such as their smart phones, synced with the school's software. This does away with the standard 'hands up' approach which can inhibit less confident pupils.

It's plain to see that technology can help disengaged learners. If we use it carefully we can help ensure that every single child fulfils their potential and finds their place in their community. You may need to be patient – it's like moving mountains, not a single linear journey, and for every three steps forward there may be two steps back. But with sensible targets it is possible to re-engage young people and instil in them a love of learning. Today's technology gives a bridge between learning yesterday and tomorrow, so we should all embrace it.

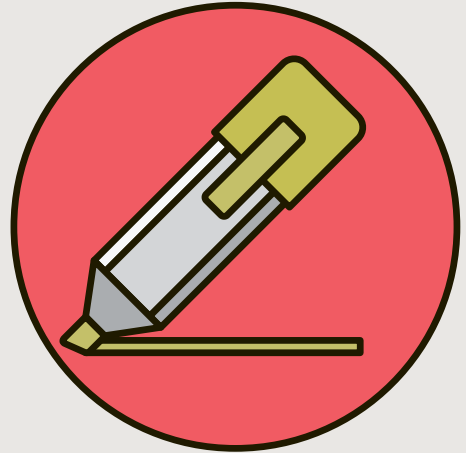
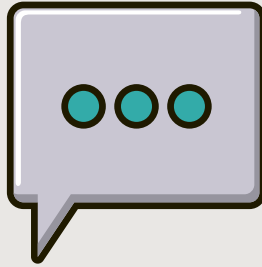
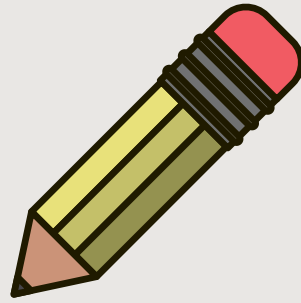


## ABOUT THE AUTHOR



**Fleur Sexton is a former teacher and now joint managing director of PET-Xi, a training provider working with over 500 schools**

**across the UK to help learners progress through intensive, motivational and inspirational interventions.**



# Special ATTENTION

Bett Awards judge **Sal McKeown** picks out some of the must-visit stands for SENCoS at this year's show

**R**emember the Universal Translator in Star Trek that let the crew of the Starship Enterprise talk to aliens? Well, Microsoft now has its own terrestrial version. Skype Translator offers voice-to-voice translation for English, French, German, Italian, Mandarin, Portuguese, and Spanish and a further 50 languages are yours with instant messaging, giving a handy way for schools to communicate with families who do not speak English. Just as good, every conversation on Skype can have subtitles, a boon for deaf users and those who struggle to

get meaning from conversations on the fly.

Recent updates of Microsoft Office 365 mean that students using the spell checker will now get definitions as well. This is great news for those with dyslexia and others who sometimes confuse similar words but will be a distraction for those who are, well, prone to being distracted. There is no way of switching this off at the moment.

These developments are part of an ongoing commitment by Microsoft to ensure its products are relevant to the wider community. However, schools need to keep up to date and a trip to stand E310 is a good first step.

## No barriers

Another game changer is TRUSTnet (stand D260). This is a specialist managed internet service provided by the London Grid for Learning (LGFL) which offers broadband services to over 2,500 schools across the UK along with teaching and learning resources. It offers a range of ICT services, but also has a good collection of software for young people with special needs from Busy Things to Wigit symbols. Its range is expanding all the time and it is being hailed by some schools as a one stop solution.

LGFL are offering space to GoQ software.



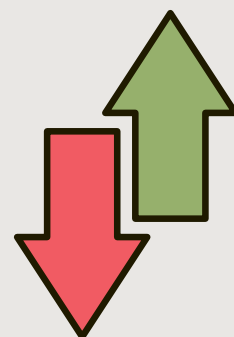
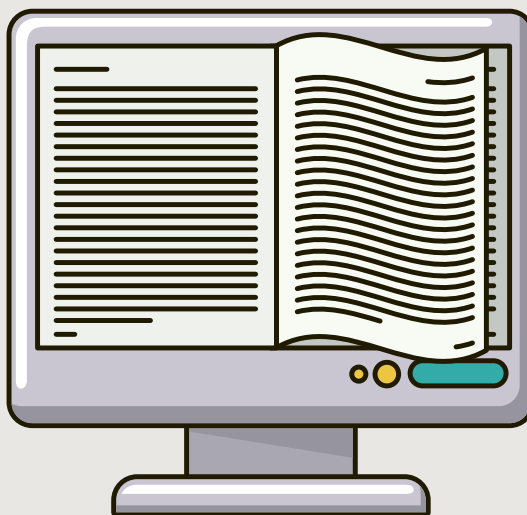
SpeakQ includes voice recognition that lets students dictate full answers or just the occasional word and WordQ offers word prediction and a screen reader and writing tool which can be used in place of a human reader and scribe in exams. Nicola Bathurst is a fan. She is a dyslexia teacher and acting Senco at Hayesbrook, an 11-18 boys' school in Kent with sports and mathematics specialisms. She has one boy in year 11 who is an enthusiastic user of WordQ and is now introducing it to year 7 pupils and working with exam officers. "Our job is to make the boys aware that dyslexia is a lifelong condition and they need to get to grips with the technology that is available to make them more independent. Dyslexia is no barrier to success."

### Focused support

Handy Book (stand B121) is an eBook reader for Android that relieves visual stress for people with dyslexia and poor sight. Students can change the background colour, font style and size of text. It also has a highlighter bar that helps readers focus on one line at a time.

According to the company, research has shown regular use improves the length of time students can focus on text and how much information they absorb from text. It has been trialled at All Saints CofE school in Weymouth and teachers reported that one student found the highlighter bar "helped tremendously. It stopped his eyes from wandering around the page and constantly losing his place." Staff also noticed that he seemed more focused, fiddled less with objects on the desk and make good use of the dictionary to check words in context.

Notetalker (stand G83) lets students use a smartphone to record lectures and presentations. "In the past, battery life and the quality of recordings stopped schools adopting this type of technology," says education director Adam Pearce, "but Notetalker's accessories, the wireless mic and the power bank, have solved these problems."



Some old favourites such as Claro (stand A440) and TextHelp (C141) are also at Bett. Both make text accessible for reluctant readers and are being used in place of a human reader in exams. Barking Abbey School has about 2,000 pupils and the school has now bought TextHelp's Read&Write licence for home use. They believe that it has been a major factor in helping students to improve their English grades.

### Recognising success

There are a couple of interesting products in the shortlist for the Bett ICT Special Educational Needs Solutions Award. Filisia Interfaces' product Cosmo (stand D446) is being used for education, training therapy and rehabilitation, so you are probably not going to see in many mainstream secondary schools. However, Charlton Park Academy and Swiss Cottage School have been using it to great effect.

It is described as 'playful technology' and consists of a smart controller and a series of on screen games which target cause and effect, memory and logical reasoning, storytelling and turn taking. It could be very good therapy for students with poor attention span as it is designed to increase engagement and because it can be programmed to offer repeated predictable experiences it could also work well for young people with autism.

Another shortlisted entry is the SEN Assessment Toolkit from GL Assessment (stand B149). When a child is identified as 'a cause for concern' the SENCo will have a relevant tried and tested assessment at their fingertips that will provide impartial evidence

and inform interventions.

Lorraine Petersen OBE, Former CEO of nasen, comments, "The resilience assessment taken from the Measures of Children's Mental Health and Psychological Wellbeing portfolio will support schools in assessing the ever-increasing rise in those with mental health and well-being difficulties in our schools. It will be a good starting place for schools to decide the strategies and interventions they need to put into place, especially for children with SEND."

Sadly, the Learn Live SEN seminar programme from nasen is light on offerings relevant to the secondary sector. The most relevant are probably Global Collaboration with Special Needs Students around the world! (27 January, 2017 13:30 - 14:00) and Insights from Hong Kong: Preparing SEN students in vocational education (25 January, 2017 10:30 - 11:00).

Bett is a hard slog at ExCel with its miles of stands and packed sessions – but there is always enough of interest to SENCOs to make it a worthwhile day out.

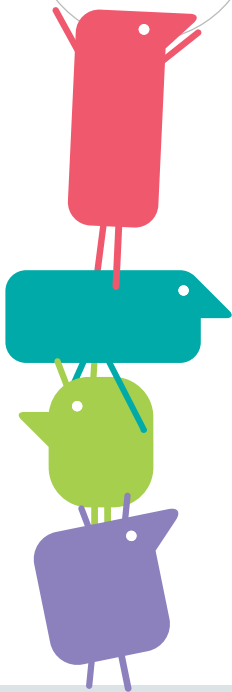


### ABOUT THE AUTHOR



**Sal McKeown is a freelance special needs journalist and author of *Brilliant Ideas for Using ICT in the Inclusive Classroom* (Routledge) and a book for parents, *How to help your Dyslexic and Dyspraxic Child* (Crimson Publishing).**





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# CASE STUDY: BARKING ABBEY SCHOOL

See how an East London school is using Read&Write to help students meet their full potential in class, at home and even in exams.



Barking Abbey is a mixed school of approximately 2,000 pupils in East London. It operates on two sites and draws its pupils mainly from the London Boroughs of Barking and Dagenham & Redbridge. The sixth form is large with over 600 students, and the school offers a large range of AS, A2 and BTEC courses to its 16-19 year olds. The school is proud of the fact that it is a multi-cultural community and aims to celebrate its diversity in as many ways as possible.

## The challenge

As a school, Barking Abbey was finding that an increasing number of students needed a reader during exams and it was becoming difficult to find enough staff for this. In addition, only a few students could be accommodated in one room if they needed questions read aloud as this 'noise' was distracting to other students. This meant that an increasing number of rooms were needed around exam time. The school also has some students who simply need a little extra help in lessons, which was also proving difficult due to staffing resources.



## Read&Write implementation

Lauren Casey, subject coordinator, explains, "Students seem to get to grips with using the software very quickly and particularly like the fact that it takes away the embarrassment factor that quite a few students face if they have to ask for a question to be read several times. It also boosts their morale as they can work independently and keep up with their peers."

## Highlights:

### Boosting student achievement

"Compared to how many students used to ask for something to be read to them and students using Read&Write, the software wins hands down! More text is being read independently and so the student is accessing more of the work set/exam paper they are sitting, than if they were in a room having to ask for help – it comes back to the embarrassment factor."

### Pupil performance

"There is also an indication that it is improving English grades when an extended piece of writing is done due to the fact that students can listen to what they have written. This helps when deciding if sentences make sense or if punctuation is missing."

"Read&Write has been great for exams," continues Lauren. "Students are no longer put at risk of distraction because headphones are used to access the software for those who need it. All students that require a reader are able to be in one room with either laptops or computers, saving the school time and money. It also means that specialised members of staff can continue with their timetable as usual instead of being taken away from it during exam time to act as reader."

## Wider applications

The staff at Barking Abbey quickly realised that Read&Write is a really useful resource for students right across the school. So, they delivered initial training to selected teachers who were then able to train other staff in different departments. Although the school is on a split site the software is now being used right across the school.

"As more departments are coming on board teachers can see how easy it is to prepare lessons using the software," explains Lauren, "and how to best adapt these to suit all students' needs."

To find out more, contact Texthelp by emailing [education@texthelp.com](mailto:education@texthelp.com)



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# KYOCERA

**BETT STAND  
NUMBER: D110**

Nigel Allen, marketing director at KYOCERA Document Solutions UK explains how better print management could lead to improved outcomes

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## **T&E: How can better print management improve teaching and learning?**

NA: From first-hand experience, we know many schools and colleges who already take full advantage of managed print services (MPS) and document management to gain a deeper understanding of their printing habits and – based on that – make cost savings. MPS in particular has the potential to help primary, secondary and higher education realise savings of up to 30%. It also allows organisations to tailor their document management environment to suit their specific needs.

## **Why should schools work with you?**

We have served the UK's education sector for over 25 years. Our experts ensure that schools and colleges experience excellent print quality and reduce the environmental impact

of printing while achieving their goals for best value procurement and sustainable purchasing decisions. We have worked with the education sector to develop bespoke solutions that help teachers to do what they do best while keeping admin workloads down to a minimum, including KYOCERA Teaching Assistant, which automatically marks papers, and KYOCERA SIMS Direct, which allows paper documents to be scanned straight into schools' SIMS databases without the need for middleware, reducing the cost.

## **Are your solutions environmentally friendly?**

We were ahead of many in developing environmentally friendly devices, launching our first ECOSYS printer back in 1992. Our unique ECOSYS technology adopts a radical cartridge-free engine design drastically reducing

the amount of waste caused by consumable replacements, as well as the energy consumed in their manufacturing and distribution. There's up to 85% less electronic waste during the life of the printer. We are still the only manufacturer to have taken this approach, combining maximum resource efficiency with maximum user economy.

## **What is your main message at Bett this year?**

KYOCERA technology has been the education sector's 'best kept secret' for many years now. We offer some of the industry's lowest total cost of ownership devices and our solutions have been relied upon by schools and colleges for decades. Visit our stand D110 for the chance to win daily prizes and find out more about our latest solutions. Tweet us @KYOCERADUK using #connectwithkyocera

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# Metro Security

**BETT STAND  
NUMBER: A170**

Trevor Wallace, MD of Metro Security, describes the company's important protective solutions for education sites...

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## **T&E: What security challenges do educational providers face?**

TW: Education facilities, together

with the pupils and teachers who learn and work there, may be exposed to a surprisingly wide variety of fire and security-related risks. These range from thefts and criminal damage through to vandalism, arson, child abduction and physical assaults. It's therefore extremely important that site managers ensure appropriate site-specific safeguards, including preventive measures and effective detection capabilities, are implemented, to provide effective protection against these potential threats.

## **How can Metro Security help address these risks?**

With nearly 40 years' experience as a systems designer, installer and maintenance provider, we start with a site survey to gauge the specific issues and local challenges facing any individual site. There is no one-size-fits-all solution – specifying and configuring a holistic, yet cost-effective solution is vital in ensuring that localised risks are minimised, while safety is prioritised. For example, layered protection also helps to deter or slow down the progress of any incident, maximizing the available time to detect and respond.

## **What does this mean in practical terms?**

Starting at the site boundary, physical protection including perimeter fencing and detector activated lighting can then be complemented

by electronic security measures such as access control and visitor management systems, CCTV surveillance, remote visual verification and automated number plate recognition alerts.

## **Are there any added-value benefits?**

Metro can design and supply bespoke software linked to access control equipment, allowing its dual-use as a cashless payment system in a school canteen, for instance, while we can write other customised apps to maximise the potential multi-use benefits of existing education equipment. Meanwhile, our standalone eyeTeach audio/visual teaching aid and self-auditing system makes use of Megapixel cameras and high-definition audio recording for teacher and student self assessments and a range of other valuable non-security classroom applications.

# Awesome POWER

We all learn best when we're engaged and inspired, says **Eric Sheneringer** – so it's vital that schools and teachers are free to innovate.

**A**we might seem like just another three-letter word, but it is so much more than that. A recent New York Times article detailed how humans can get goosebumps when we experience awe: that positive feeling of being in the presence of something vast that transcends our understanding of the world. It is a catalyst that can motivate people to do more good; and if we bring it into the classroom, we can inspire students and engage them in a more authentic form of learning.

The power of awe cannot be overstated. It is a huge component of life; it's hardwired in our brains. When we experience the sensation of awe, we are consumed by wonder, relevancy, emotion, engagement, inspiration, and real-world connections. By facilitating this sense of awe in the classroom, we can help children to form strong connections between what they are being taught and their real-life experiences, creating a learning environment that is relevant, meaningful and valuable, rather than shallow and transient. The simple truth is that children won't learn if they are not engaged. And research has shown us that the level of engagement with learning decreases the longer a child is in school – which is, of course, the opposite of what we





want! We want to nurture children's natural curiosity, inspire their thirst for knowledge, and help them to build emotional connections between what they're learning and their experiences of the world around them. Awe is a driving force for learning that will not just benefit our students now, but also well into their future.

### Positive disruption

However, traditional views and functions of school can prevent many students from experiencing the joy and power of awe as a catalyst for meaningful learning. Current policies in many (not all) schools focus on control, compliance, conformity, and rules that don't inspire awe in learners. Data from a recent Gallop Poll shared and analysed by Dr Scott McLeod shows what many of us already know – students are disengaged, bored, and disempowered. Systemic change is needed even in schools where there are isolated pockets of excellence, as all students should be exposed to the power of awe. We have a responsibility to awe, and students need us to bring this element into their daily learning experiences. To do this we must innovate our practice; we must be creative, imaginative, playful and unafraid of failure. Increasing our willingness to innovate can result in positive disruptive changes to learning.

Disruption in a way that facilitates improved learning opportunities that engage and empower students through awe should be the goal. In order to drive innovation there has to be a focus on changing learner needs, evolving technologies, changing the learning environment, and bold ideas. Schools and educators can take advantage of inherent stimuli in these drivers to create better, more meaningful learning experiences for students that leverage the power of awe.

In my session at Bett, I will outline the four main drivers of awe within education, which are:

### 1. Evolving technologies

Technology continues to change at a rapid pace, which presents education with some

exciting opportunities to awe learners. Some examples include augmented reality (AR), virtual reality (VR), open education resources (OER), adaptive tools, coding, drones or robotics, and gamification. With this excitement and possibilities, it is important to remember that pedagogy trumps technology if the goal is meaningful student learning.

### 2. Changing learning environment

You can have all the best technology and digital pedagogical techniques, but if the learning environment remains unchanged the results that we yearn for might never materialise. Learner-designed spaces emphasise comfort, flexibility, choice and the use of authentic tools. They are reflective of the real world, leverage the outdoors, and capitalise on mobile technology.

### 3. Changing learner needs

Learners crave a greater purpose and sense of relevance in their learning. We must seize the gift that access to the real-time web provides to foster student learning anytime, anywhere, and with anyone. Awe can be cultivated in both personal and personalised learning opportunities where the main motivation comes from student agency. This all culminates in a shift from consumption to creation and curating as a means for students to awe us in their learning experiences.

### 4. Bold ideas

There needs to be a shift from business as usual to business as unusual. Ideas that are bold work to counteract the status quo and current education reform policies. We must work to elevate the profession, integrate more play in the school day, embrace failure throughout the system, redefine success and learning, and provide meaningful professional learning with accountability.

In our mission to inspire students, we must all of us make a concerted effort to bring awe back into learning. This is not an easy journey, but one that is well worth the potential hardship.



**DON'T MISS THIS!**  
**ERIC SHENINGER**

○ Eric Sheninger, senior fellow at the International Center for Leadership in Education  
'Inspiring Students: Bringing awe back to learning'

Session: Saturday 11.20, Bett Arena, 11.20, Saturday 23 January



# A THOUGHTFUL CLASSROOM



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At St Catherine's school, students and teachers alike are learning about the power of digital intelligence, as **Laura White** explains...



**R**ated as 'outstanding', St Catherine's blends the very best of traditional British educational values with a contemporary, reflective engagement with the digital world. As a 1-1 iPad school, we seek to cultivate in our students, staff and parents a mindset of 'digital intelligence' – an attitude of openness to, confidence in, and critical engagement with digital learning, which combines digital skills and digital literacy.

How does this translate to the everyday classroom? As a theology graduate, I approach technology in the classroom by following my twin theological interests – firstly in human development, and secondly in life's 'big' questions. As we develop and refine our digital learning strategy here, it is important that we continue to focus on people, both teachers and learners, and on the big questions ahead. Digital tools can be used to teach thinking, and to help students engage more deeply with life's big questions.

The key questions educators and leaders should be focused on are clear: how can people make the best use of these emerging tools in ways which support teaching and learning? And how can we ensure that everyone is involved in the journey? At St Catherine's, my role as digital learning coordinator involves leading the classroom applications of digital learning, as well as developing staff skills. This kind of role is becoming increasingly common as schools recognise the importance of a focus on teaching and learning at the heart of digital developments.





## Deep thinking

Central to the idea of 'digital intelligence' is the development of Thinking Skills. As a de Bono accredited school, Thinking Skills underpins the whole curriculum here at St Catherine's. During my session at Bett, I'll share some of the ways in which we are using technological tools to further the development of these skills, and in particular, the key skill of metacognition.

When students reflect on their learning, they become aware of their own processes and after recording those reflections, they are able to set more meaningful targets and develop greater insight. Sharing examples of this on the ground from my own classrooms and those of my colleagues will be at the heart of my session.

The transformative power of tech tools for learning comes from asking – and encouraging students to ask themselves – the hard questions: What was most challenging about the process? What did I do really well? How can I improve? We've been developing the use of Google Forms, as a reflective tool to give students practice, time, and space to consider and address these questions. It also gives them a method to record and review their responses at a later date, leading to even greater insight and self-awareness over time. I will be sharing the Forms I use for teachers to adapt for their own contexts. I will also share some examples of student comments from Years 7 to 13.

## Reflection and challenge

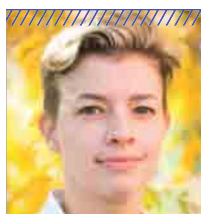
iTunes U can also be adapted to this metacognitive process. We've been exploring this, repurposing the 'Assignments' as stimulus material, and 'Discussions' and 'Private Comments' as differentiated spaces for peer and private reflection.



This also provides students with the ability to see themselves developing over time in the context of their peers. The ability to comment on and observe other students' learning can also prompt greater metacognitive skills. In my session I'll share some of our iTunes U courses from St Catherine's. Our Year 7 'Grey Matters' iTunes U course, and both of our Year 10 and 11 PHSE courses, 'Humankind' and 'LifeSupport', will be used as examples of direct teaching of metacognition, and the use of Thinking Skills questions to explore challenging topics, such as radicalisation and diversity.

The twin themes of human development and the big questions of effectiveness and blended learning continue to fascinate me. I believe that the thoughtful classroom can unlock the potential of the next generation, equipping them to confidently create and manage the world of their future. I'm really looking forward to sharing my session with my peers at the show, and learning from theirs, too.

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**“DON'T MISS THIS!”**  
**LAURA WHITE**

○ Laura White, St Catherine's School

'Reflective Learning – Using tech tools to teach meta-cognition'

Learn Live: Secondary, 10.30  
Saturday 28 January

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# BALANCING ACT

Teacher workload is a huge issue for the profession – but a small investment could make a big difference

It will come as no surprise to anyone – least of all teachers themselves – that a large section of the teaching population feel overworked. A survey by the Guardian Teacher Network earlier this year revealed that 82% of teachers felt their current workload was unmanageable, with more than 70% saying that this was to the detriment of their mental or physical health.

The *Reducing teachers' workload* policy paper published by the Department for Education, as well as initiatives such as the Fair Workload Charter devised by Nottingham's Education Improvement Board

(EIB), demonstrates that this is very much a hot-button topic within education.

One thing that has the potential to be a real game-changer in terms of reducing teacher workload is technology. Already there is a wide range of tools out there which look to automate many of the tasks identified in the various surveys and reports as being key causes of an unmanageable workload.

Just some of the ways in which online tools can help to minimise teacher workload are:

- Simple systems for setting homework – with no marking overhead.
- Real-time activity and progress monitoring.
- Quick and easy report generating.
- Engaging students and encouraging self-study.
- Pre-loaded curriculum-based content.

Marking and planning particularly are among the most time-consuming tasks for teachers, and they do not go away. But investing in tools and systems that can automate – and expedite – some of these tasks, making processes more efficient and effective and crucially saving time, is entirely worthwhile.

**Vocab Express is an online platform for MFL and classics which aims to motivate students to learn vocabulary and grammar independently. Homework and in-class activities can be set at the click of a button and all student activity can be monitored by teachers in real time. And with all content and activities pre-loaded, you can get started immediately!**



# BOOST STUDENT OUTCOMES

Use ClickView Interactive Videos to target your teaching

**BETT STAND  
NUMBER: B300**

The most frustrating aspect of planning for a class when targeting lessons effectively, is ensuring all students can grasp the content and express an understanding. Checks for learning at the end of preceding classes can help, but they are undermined by the time pressures to move along whether all students grasp the lesson's objective.

## Turn passive viewing into active learning

This is where ClickView's interactive videos play a constructive role in boosting teachers' ability to gather meaningful data prior to class, enabling them to plan effectively and target their teaching more precisely. ClickView Interactive Videos enable teachers to create active learning experiences by adding built-in questions or problems, which encourage students to engage more deeply with the video. Students consider what they are viewing, check they have understood, and reflect on key learnings.

## Assess the responses of your students and class

The interactive videos deliver rigorous and multifaceted data that enables teachers to understand how each member of their classroom is going both individually, and in relation to the rest of the class. The data also allows teachers to gain broader insights into whether there are significant gaps in learning across the class. Importantly, if these interactive videos are completed prior to the lesson teachers will be able to gain these analytics before even entering the classroom thereby enabling them to plan and target their teaching.

## Using ClickView interactives to target your teaching

ClickView's reporting tools give teachers a far deeper understanding of how well students have understood each lesson's content and, in turn, tailor their lessons for the actual, rather than guessed, needs of each student



in their classroom. ClickView's interactive videos enable teachers to target their teaching to meet the needs of each student in their classroom and, consequently, boost student engagement and outcomes.

## Come and see for yourself

Visit ClickView on stand B300 at Bett Show 2017 to experience ClickView Interactive Videos, along with the company's immersive and educational 360° videos.

# New CONNECTIONS

**Hannah Scott** runs through some disruptive technologies with the power to revolutionise communication at your school

**D**isruptive technologies are revolutionising industries across the world and transforming the majority of workplaces today. In turn, this has dramatically changed the way in which we communicate, as technology provides fast and effective forms of online interaction. However, education is the one sector in which disruptive technologies are finding it comparatively more difficult to break through.

Perhaps the reluctance of some schools to embrace new edtech stems from a lack of funding, or a distrust of the supposed benefits for pupil learning and teaching practice. Or maybe it's simply that the word 'disruptive' usually has negative connotations in a learning environment. It certainly goes without saying that schools should approach some edtech with caution, and careful research should take place before adopting any new software. But this caution shouldn't hinder opportunities to enhance school culture; in a world where most industries are being shaped by digital advances, schools that resist new technologies may not be giving their pupils a fair chance in life post-education.

New edtech developments not only open personalised learning pathways for children, they can also revolutionise teacher communication and simple administrative tasks within a school. Through new communication channels, technology can help break the confines of textbook resources and staffroom meetings.

## Pupil progress

Discussion of pupil progress is crucial in teacher communication, especially when monitoring SEND or underachieving pupils. New edtech provides innovative avenues in this method of communication, breaking the boundaries of meetings and the use of clunky emails.

Programs that work as online learning systems, which are designed in line with a teacher's pedagogical approach, are excellent ways for educators to monitor and share pupil progress. Educational apps like Showbie are

easy to use in classrooms, particularly where tablets are in use, and they provide a platform in which teachers can set assignments for students and monitor learning development.

Smart features on the Showbie Pro version like the shared folder, document viewer, notifications, text and voice addition tools, ensure that teachers can track pupil progress as they complete assignments whilst also minimising paperwork and increasing productivity. The Staff Room 2.0 feature also allows teachers to quickly share resources and discuss pupil progress and news, keeping everyone in the loop with instantly accessible online conversations.

Other freemium programs like Evernote allow easy access to teachers' notes on pupils as well as lesson plans and other resources. Evernote acts as a cross-platform online notebook which is easy to share with teachers through its archiving features. Keeping this information in one place also makes it easy to discuss pupil progress in school meetings or with parents, reducing the need for keeping files and the risk of losing information.

## Ideas and resources

Technology has also transformed the way in which teachers discuss ideas, with a plethora of online communication platforms, such as forums and social media, opening up a worldwide discussion on best teaching methods and resources. Once again, edtech allows teachers to store resources making them easily accessible.

With many teachers already utilising the power of Twitter and hashtag conversations to discuss methods of teaching with peers abroad, bringing this into schools can be equally beneficial whilst making conversations more secure. The well-known Microsoft Office 365 or Google Classroom are both great programs which encompass email, calendars, document sharing and more. As direct competitors they are largely similar, making both the SharePoint aspect of Office 365 and

Google Docs equal in their ability to provide an excellent platform for staff to share resources and ideas.

For technology more specific to file sharing and online conversation, a chat program like Slack is easy to use, simple to set-up, and great for both formal and informal use. Similarly to Twitter, Slack provides an accessible chat platform for teachers to discuss best teaching practices, sharing resources, or establishing PLCs. However, unlike Twitter, it is private to your school, and you can organise chat topics separately, using the search function to find past conversations easily. You can share most file types and documents on Slack, and features like live-stream can be used to share conferences or meetings with your colleagues.



Schools using chat technology like Slack have seen a massive reduction in the amount of emails sent along with greater productivity in their work. Chat and file sharing technology creates inclusive online conversations that are ongoing and easily stored, and enhancing staff communication in this way can positively affect learning outcomes.

## Safeguarding concerns

Communication regarding safeguarding issues needs to be secure and organised in order for effective action to take place should any

concerns arise. While safeguarding software is becoming commonplace in many schools, a large number are still relying on traditional methods of communication in this area. New programs like SafeGuard Software, MyConcern, and CPOMS offer these schools a solution, and are designed to provide secure platforms for educators to record any safeguarding concern they might have regarding their pupils.

Taking MyConcern as an example, the software is designed in line with DfE, OFSTED, and Estyn inspection standards, and the program ensures a more effective way of dealing with safeguarding concerns along with reducing the risk of issues going unnoticed. MyConcern chronologically stores information and staff can message securely within the

program, allowing discussions to be dealt with effectively, and keeping the DSL in your school updated. Naturally, the importance of keeping a school environment safe for pupils is a number one priority and new technology in this area makes safeguarding conversations easy to navigate for teachers whilst minimising the risk of missed safeguarding cases.

Bringing communication in schools online through technology doesn't spell the end of face-to-face interaction, it merely allows for more effective and complex conversations to take place and be stored, a necessary function in a fast-developing world. This doesn't mean implementing every new technology that is introduced (remembering just a couple of usernames and passwords is enough of a headache!), but pairing staff meetings with online community conversations within your school can not only dramatically enhance the quality of inter-staff communications, but also school culture itself.



## ABOUT THE AUTHOR



**Hannah Scott is a staff writer for Teachers Register (teachersregister.co), who takes an interest in current affairs and new advances in the education sector.**





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# DIFFERENT BY DESIGN

Avacor prides itself on developing edtech to meet the needs of today's teachers and students

avacor



AWARDS 2017  
FINALIST

Launched at BETT 2016, the revolutionary VTF interactive flat panel range from Avacor has been specifically designed for the needs of the teacher and students in the classroom. Pupils are surrounded by digital devices in the home and at school, it's part of everyday life; the principle of the Avacor VTF series is to integrate the display at the front of the class into daily teaching.

Teaching and technology have converged in the classroom, we have witnessed an interactive revolution over the last 20 years, seeing teaching move from dusty chalkboards to large format displays. These interactive devices are now regarded as a 'must have' technology to facilitate the core teaching and learning function of demonstration and modelling. By moving away from propriety software or Android operating system, choosing instead a Windows 10 software platform - instantly recognisable worldwide, Avacor has removed the need for in-depth training programmes, meaning teachers can spend more time teaching rather than learning how to get the best out of their technology and software.

## Fast and accurate

Teachers can walk straight up to the screen and access and annotate directly into a range of familiar Microsoft software packages such as PowerPoint, Excel, Word and OneNote straight from the panel. Another unique feature is the InGlass™ touch technology, offering



responsive, smooth, intelligent and accurate touch. Avacor VTF screens are the first to offer this touch technology in a panel range. InGlass is up to five times more responsive than other screen technology, meaning that there is no more waiting for ink to 'catch up', wasting precious teaching time. This combined with a 4K resolution means that users will also see the benefits of precise and accurate annotations, no matter how small and so will all the class, no matter where they sit in the classroom. For our students who are truly digital natives, using the VTF range of panels from Avacor is like experiencing a giant tablet on the wall.

"We are delighted to be shortlisted for a BETT award," comments Mark Mason, head of sales at Avacor. "We endeavour to create interactive

technology which meets the daily needs of the teacher and student both in and beyond the classroom, so to be considered for such an esteemed award is a honour and privilege."

**Visit stand C320 at BETT 2017, to see Avacor's new range of interactive flat panels which are truly different by design.**  
[www.avacor.com](http://www.avacor.com)



# NO FEAR HERE

Discover how three simple strategies are making computer science accessible for every student at one West London school



46

**C**omputer science is scary. There's no way around it; I've seen the cold sweat on teachers' brows as they discover it on their timetable and the blind panic of Year 8 when they're told that a string is anything other than a length of cord. It conjures images of great film hackers, those anti-social geniuses tapping out fast moving code on four separate monitors, like Rami Malek in *Mr. Robot*, or Jesse Eisenberg in *The Social Network*. Computer science is an intimidating prospect, then – and yet, here in our West London comprehensive girls' school, we've just enrolled all 214 of our Year 9 students on the GCSE course.

This is a challenge facing many schools around the country – ICT is dead; long live computer science! Teachers are finding themselves managing a subject of which they have no experience, and heads are having to decide whether they can justify all of these expensive computers if there are no specialist teachers to use them. Isn't it just a subject for the cleverest students, the cream of the crop? Isn't it just for boys? Where are the teachers going to come from, and how

are we going to train them?

We've been tackling this issue head on, and we're seeing good results using three key strategies: using robots, using videos, and teaching bad programming. Bear with me on the last one.

## Using robots

The first issue you encounter in any new subject is engagement: "What do I have to learn this for?" Your high achievers will dive right in, but those that find it difficult will very quickly question the purpose of what they're doing. Explaining why strings, integers and floating point numbers are useful to a Year 9 student is a big ask, even when you tell them that they're the code NASA uses to send people into space. In anticipation of this, we spent a lot of time experimenting with different types of robot, and eventually found the mirobot: a simple, MDF robot that runs on Python, our chosen programming language. We worked closely with the creator to bring them into the classroom, and ultimately invested in 70 – enough for each of our students to use them in pairs. Convincing a 13-year-old that variables are



useful is very difficult. Giving a 13-year-old an exciting toy and a set of instructions on how to use it is very easy.

We've incorporated robots as a key part of our schemes of work, and use them to demonstrate the effectiveness of variables, as well as helping the students understand inputs, iteration and data validation. Later we'll use them to help the students design their own subroutines and understand what libraries are. In every case the students get an instant, physical reward for writing good code, as their robots do something



exciting. Disengaged students are constantly encouraged to take part in the lesson by the reaction of their peers, rather than the remonstrations of their teacher. Having used robots for a while now, I don't know how we would do without them.

### Video tutorials

Differentiation is a particularly acute challenge for a new subject, as the range of abilities is so wide. When we made computer science a core subject we committed to teaching it to students at every point on the grade spectrum, and each of our 10 classes has targets of 3 all the way up to 8. As a London school we also regularly receive students with no grasp of English, and students who arrive halfway through the year.

To deal with these challenges, we've decided to let go of traditional demonstration at the start of the lesson, and replace it with help videos. These are simple, screen recorded explanations of the key concepts of programming, divided into introductory and advanced techniques. Students are supplied with headphones

during lessons, and use the videos to understand the concepts they need. This has proved wildly successful, as students are able to learn at their own pace. SEND students will often watch, rewatch, and watch the videos again, carefully pausing at key points to copy code, while high achieving students skim through the videos to just glean the new pieces of information they need for a task.

Using videos also frees up the teacher within the room, and supports those who struggle with the subject. Rather than pinballing around the room dealing with issues, we are able to pinpoint the students who are in need of significant intervention, or run challenge workshops at the front without worrying if the rest of the class are stuck. Teachers who find the subject knowledge difficult can watch the videos themselves before the lesson, or rely on them during the lesson to deliver the content effectively. This ensures quality teaching and consistency across our classes, and provides easy catch up opportunities for students who miss a lesson or arrive late.

### Bad programming

Computer science teaching often results in polarised results – students either 'get it' and fly, or don't, and languish. To write elegant code, students have to understand very complex concepts and techniques. If they don't, they simply achieve nothing. This is not something we accept in other subjects – students are always asked to show their working so that we can award marks even

if the student doesn't fully understand the concept. We shouldn't accept it in Computer Science, either.

We tackle this issue by teaching concepts at an appropriate level for different target grades – and this means teaching bad code. Every activity is delivered at three levels: green, amber and red. If we ask students to print the numbers 1 to 10, a green (level 3) student might be encouraged to write 10 print commands, while a red (levels 7-8) would learn how to construct a for loop. Both students will learn valid code, and both are then capable of completing the problem. When we teach code at appropriate levels our students feel challenged at all grades, and crucially, they all get the satisfaction of writing code that works.

Our journey with computer science is just beginning, and we look forward to developing these strategies and adding new ones as our students progress. If you're teaching it and struggling, or you're not sure if you want to teach it at all, why not give the strategies above a try, and see what they can do for you?

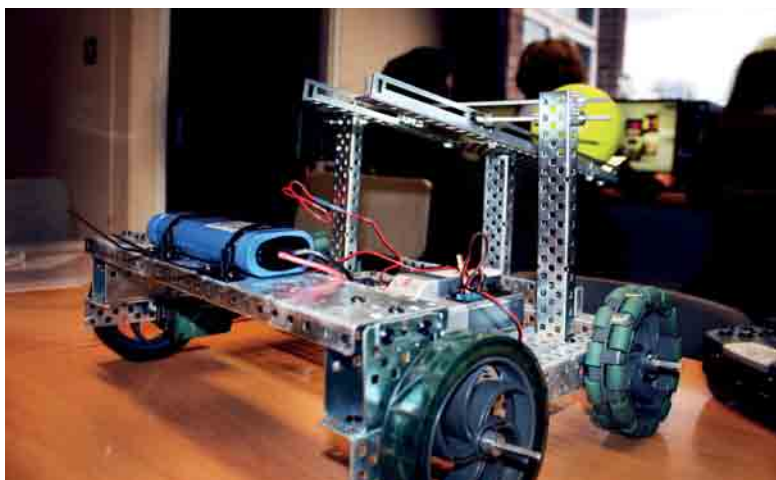


### ABOUT THE AUTHOR



**Pete Curran is the head of computer science at The Ellen Wilkinson School for Girls in Ealing, London. The school educates over 1400 pupils ages 11-18.**

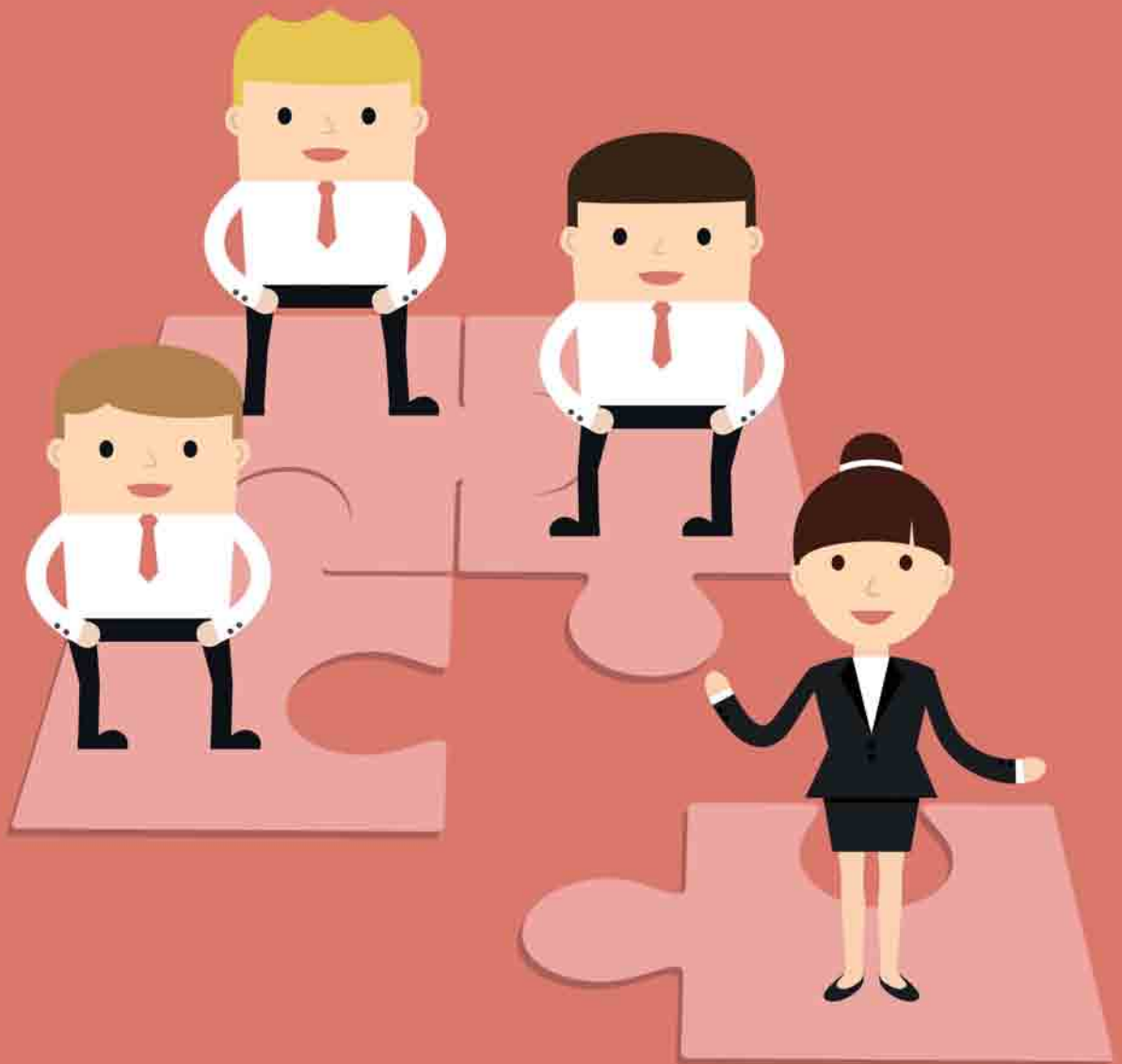
“Giving a 13-year-old an exciting toy and a set of instructions on how to use it is very easy”





# What's your PROBLEM?

Sometimes, says founder and CEO of NoTosh Ewan McIntosh, you need to find the haystack before you start hunting for the needle...



**A**t Bett 2017, along with colleagues from my global team, I will be hosting a 'Leadership Hackathon'. This event will be taking place on Wednesday 25 and Thursday 26 January, at 90-minute sessions throughout each day. It will encourage school leadership teams and education innovators to bring along a challenge they face at school and work with their peers to create, develop and prototype an original solution. With six different sessions, each focusing on a different phase of the problem-solving process, attendees can cherry-pick which ones will be of most use to them, and will be able to come away with concrete and implementable solutions to everyday issues.

### Selling the solution

Sometimes, you need to find the haystack before you can find the needle; in other words, you need to know what the problem is before you can find a solution. In the first session of the Hackathon, attendees will be encouraged to think about what they want to change in their school, what causes them issues or inhibits their teaching practice. They will be supported in examining all aspects of the problem and in coming up with creative ideas to tackle it. When the 'haystack' is found, I will help attendees to find the 'needle' – that innovative, targeted and tailored solution. They will be given a useful 'toolbox' of methods to help them generate ideas and then to prototype them, so they come away with fully rounded and viable solutions.

Having a great idea is one thing – and Bett is the ideal place to spur creative ideas – but if you can't convince people of

**"Screens are small and can be limiting when it comes to getting everyone thinking and working together"**

the value of these ideas, then ultimately, they go to waste. This can be a blow to those innovators who have worked hard to come up with creative solutions to the problems they see in the school around them, and can deter people from trying to make positive changes in the future. NoTosh's session will help to mitigate this by not only cultivating idea development, but also teaching attendees how to successfully pitch these ideas to decision-makers. This will be of huge benefit to those educators who come away from Bett with fresh ideas of their own, or who have been introduced to innovative new solutions that could revolutionise the way they teach and work among the hundreds of stands at Bett. These Hackathon sessions will empower educators to tackle their everyday issues head-on, and then to turn their ideas into a reality when they return to school – creating the next generation of genuine education game-changers.

### New spaces

In another one of my six NoTosh sessions, titled 'The seven spaces of learning', my colleagues and I will explore the ways in which different environments affect learning and achievement. We'll discuss the various ways in which schools can enhance learning

spaces without breaking the bank, and how to achieve a balance of individual and collaborative work spaces. A lot of emphasis is placed on collaborative working in the classroom, with group work often being actively encouraged. While this is a positive thing, I believe that children also need 'secret spaces' – safe places where they can be alone to think, reflect and develop their own ideas, before sharing them in the classroom environment. I will also explain what I mean by 'participation spaces' – environments which encourage everyone to get involved.

One example of this is taking learning off of the screen and onto the walls! While technology enables collaboration in many ways, screens are small and can be limiting when it comes to getting everyone thinking and working together. By sticking ideas, words, images, mindmaps and so on, to the wall, you enable all children to take part in the activity and make their own connections – adding an all-inclusive energy to the learning process. Also, giving children the ability to move around, pick things up and arrange them to build connections helps them to engage with their learning and better absorb information. This kind of 'project nest' environment can act like a colourful market stall, inviting all children to pay attention and take part.

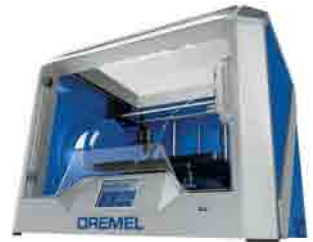


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Bring your **ideas** to life **easily**



# Explore. Build. Learn

## Second Generation Dremel 3D40 Idea Builder.

From 3D file building and problem solving, to sparking creativity and making STEM (Science, Technology, English and Maths) even more engaging, the new second generation 3D40 Idea Builder from Dremel works across a wide spectrum of subjects within the school curriculum.

### Key features include:

- Touch Screen Operation
- WiFi Connectivity
- Larger build platform
- Self-levelling
- Anti-clog filter
- 10 curriculum based lesson plans\*
- Coloured filament\*

For more information and stockists details  
visit [www.dremel.co.uk](http://www.dremel.co.uk)

\*available to download separately, cost may apply

# THE 3DUCATION GENERATION

With a bigger build platform, WiFi connectivity, and a touch screen for easy use, Dremel's new 3D printer is set to transform teaching and learning

**Bringing 3Ducation to life and integrating the latest print tech solutions into the classroom to help inspire students from STEM subjects and beyond, Dremel has now unveiled its next generation of build machines – in the shape of the new, feature-rich 3D40 Idea Builder.**

From 3D file building and problem solving, to sparking creativity and making STEM (Science, Technology, English and Maths) even more engaging, the 3D40 idea builder pulls together a wide spectrum of elements from across the school curriculum.

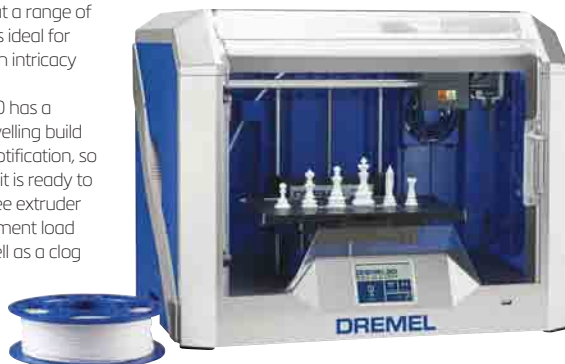
Making it simple to incorporate 3D printing into lesson plans, this latest model comes complete with a wide range of 3D files readily available that slot into the curriculum. Plus there is access to a host of downloadable project files including cell transformation kits to measuring equipment and the 3D40 can be used to encourage students to create themed objects or even design 3D files from scratch.

Thanks to integrated software, WiFi connectivity and a full colour touchscreen, it's never been easier to unleash your students' imaginations.

## Greater functionality

With one of the largest build platforms available, the Dremel 3D40 gives the flexibility to create even bigger objects with a combined print resolution of 100 Microns enabling printing at a high definition. Printing has got even faster too and, printing at a range of just +/- 1mm, means it is ideal for projects that require both intricacy and speed.

Easy to use, the 3D40 has a new semi-automatic levelling build platform with an alert notification, so you know exactly when it is ready to go. The maintenance free extruder also has automated filament load and unload ability, as well as a clog detection feature which triggers an automatic pause if any issues are detected.



## Get connected

Perfect for anyone on the move, the 3D Idea Builder has increased connectivity and can print objects either by direct link to a computer or via a USB stick.

The new model also comes with Wi-Fi compatibility, allowing users to monitor their

build and interact with the 3D40 remotely too; so it is simple to check the temperature, time remaining and slice layer, as well as being able to cancel and pause printing and all without having to hover over your printer to know what stage it is at.

The Dremel 3D40 Idea Builder costs £1,099, and is available from October 2016 from retailers and the Dremel online shop.

It comes supplied with a white filament, a USB cable for connecting to a PC, a USB Flash Drive to store data, a power cord, three build tapes, a tool to remove finished solids and a tool for cleaning the printhead. Additional coloured filaments are available separately. The 3D40 Idea Builder comes with a one year's warranty.

## Find out more

For further information about the 3D40 Idea Builder, inspirational videos, project ideas and a selection of unique design tools, visit [www.dremel.co.uk](http://www.dremel.co.uk)

# All-round ACHIEVEMENT

Increased access to the latest 3D technology is helping to open new avenues for learning and skills development in schools everywhere, says **Andrew Cluney**

**A**s technology advances it inevitably works its way into much of our lives and will continue to do so, particularly when today's school-age children reach the workplace. To be prepared, today's students will need a new set of skills under their belts. However, in many cases, this skill set can be built into the existing curriculum to enhance lesson plans and increase student participation.

3D printing is one of these areas. More and more we are hearing about computer

controlled printing being used in engineering, prosthetics and even food processing as access to the technology and the possibilities develop. With the popularity of mainstream 3D printing rising across the world, the introduction of high-quality, classroom based models now ensures students have the opportunity to interact with and understand this type of technology from a young age.

Importantly, it helps take a fresh look at learning for a digital generation. From combustion engines to drones, students can design and engineer using hands-on trial and

error learning.

The emphasis on teaching by showing and doing inevitably helps break down larger, more complicated concepts into individual parts for easier comprehension. By harnessing the creativity, technical interest and inherent digital knowledge of today's pupils, it at the same time nurtures skills which will be increasingly important for the future workplace.

Understanding software and the know-how to design and construct workable files, can all be gained by exploring 3D printing techniques. Building models



and prototypes of mechanical, architectural and artistic designs adds further practical understanding and gives valuable, first-hand experience of how this technology can be applied to solve problems and develop new products.

### Original explorations

Perhaps the most natural fit for 3D printing is within core STEM subjects. It gives teachers the ability to take lessons to the next level where a project can be designed, tested, tweaked and retested to deliver the best outcome.

These subjects no longer have to be diagrams and charts on a page but can now be tangible models of complex, modifiable concepts.

The design of a catapult for instance, bonds engineering theory with maths and D&T, taking the Laws of Conservation of Energy

concepts, trajectories and equations off the page and bringing them to life. Something as simple as printing the pieces for students to make their own quadrat for accurate sample measurement, equally adds an extra dimension to learning and involves students in the project from the outset.

Yet the uses of 3D printing in schools reach wider than STEM.

What this technology allows is the chance to create unique files and realise students' own ideas across a wide range of topics. This could result in them building anything from unique art sculptures to set designs, costumes, historical re-enactments and even unique musical instruments. Whatever the premise, it certainly opens the path to originality.

#### Case study: University of Liverpool / Dovedale Primary School Anfield Truss Project

Demonstrating the uses of 3D printing in schools, the University of Liverpool worked with Year 5 pupils at Dovedale Primary School in Derbyshire, to design a new truss for Anfield stadium. In essence this was a 'live' project, as the truss itself was being developed as a key feature of the redesigned iconic Liverpool FC stadium, ensuring pupils felt completely engaged in a real-life scenario.

##### Key elements:

- Year 5 pupils split into groups
- Research and design a prototype 650-tonne truss
- Form own company, branding and accompanying website
- Files created by University of Liverpool engineers

##### The results:

- 196 individual parts printed using the Dremel 3D Idea Builder
- Testing undertaken by adding weights until it collapsed

"It was a fantastic opportunity to introduce the children at Dovedale to the latest technology and concepts in the field of engineering using the new truss at Anfield stadium as a real-life example," explains engineer Dr Andrew Green, from the University of Liverpool, who undertook the project with Dovedale School. "They impressed me with their enthusiasm, their ability to listen to and follow instructions, and to work with great care and attention."

"As a lifelong Liverpool fan, the chance to work on a project about Anfield was too good to be true," adds Andrew McLaren, a Year 5 teacher at Dovedale Primary School. "After initial discussions with the University, the opportunity was there for the children to investigate the redevelopment of Anfield and to 'Think Actively in a Social Context'."

"They had to learn to become engineers and recreate the new Anfield truss. They researched Liverpool's redevelopment, drew sketches, researched trusses, formed a company, designed a website and logo, built a prototype and made the truss (ensuring quality assurance).

"It was an extremely fluid process, gaining real momentum; culminating in the children producing fantastic work. There were so many cross curricular opportunities for the children. In addition to working as a team, they became more independent in both thought and action. It was a real joy to see them develop throughout the project.

"Having the Dremel 3D Idea Builder in school was extremely exciting, not only for the children but for me as well. There was a real buzz of excitement every time we used it."



#### ABOUT THE AUTHOR



Andrew Cluney is brand manager at Dremel



At Steyning Grammar School, **Sachin Choithramani**'s role is to ensure digital technologies become thoroughly integrated into daily teaching and learning

**T**he way in which digital technology is being used in the classroom is evolving and the creation of my role as learning leader for digital technologies at Steyning Grammar School just over a year ago was in response to this evolution. Many schools will be familiar with the established role of a literacy coordinator; often this is the teacher charged with leading, managing and developing literacy across the whole school. A digital learning leader has very similar responsibilities – it is a role that ensures students', teachers', support staff's and even parents' digital literacy skills are developed in a way that improves learners' outcomes. Indeed, in the same way that a literacy coordinator need not be an English teacher, a digital learning coordinator need not be a teacher of computing (and I'm not, I'm a drama teacher!).

At our school, we know we could not excel without the technical expertise and advice of our dedicated team of IT technicians led by our exceptional network manager. The digital infrastructure of the school demands this level of expertise so that we can function on a day-to-day basis. However, my role is far more about strategic development and training; it is about ensuring that the development of our infrastructure supports exceptional learning in every classroom. As a school, we've had a BYOD policy in place for some time and we are now moving towards implementing a 1:1 programme of Google Chromebook. As we ditch the idea of curriculum-based lessons in a dedicated IT suite, we want to see technology as a part of the teacher toolkit in every classroom. The vision is for digital technologies to become integrated into the blend of classroom learning activities.

### Transformational model

Dr Puentedura's SAMR (Substitution, Augmentation, Modification, Redefinition) model has been useful in guiding us. As a school, we must challenge ourselves to avoid simply substituting pen and paper for the more expensive screen and keyboard, as doing so has little discernible impact on student outcomes. However, as we increasingly transform learning activities by ensuring that they augment and modify our existing practice, we begin to see the positive impact that technology can have.

Take three simple learning activities that most teachers use in the classroom:

- The 'Big Question', which may promote curiosity at the start of the lesson.
- The 'Hinge Point Question', which assesses





“We want to see technology as a part of the teacher toolkit in every classroom.”

student understanding and shapes the activities for the remainder of the lesson.

- The ‘Exit Ticket’, which forms a part of the plenary and informs future planning.

Adapting the simple functionality of the question tool in Google Classroom allows us to transform these established activities:

- We can capture and keep each individual’s response without it being wiped from the mini white board or lost on a scrap of paper.
- We can see and hear every response instead of relying on the few hands that might be put up.
- We can create a back channel and respond to individual student’s responses and we can even allow other students to respond to one another.
- We can immediately and automatically evidence the learning taking place with our colleagues as well as students’ parents and carers.
- We can reduce the time it takes to complete these traditional activities.

And with that example I have perhaps reflected on what is at the core of how



the role of an IT manager has evolved; the functionality is ‘simple’, but it requires training. At our school we are fortunate to have a highly committed and professional team of teachers who do achieve excellent outcomes for our students. We commit ourselves to the vision of ‘every person being the best they can be’ and this vision means that we are committed to innovating, improving and, in Puenteadura’s words, ‘redefining’ our practice, and for this, training is key. Excellent professional development is a core part of Steyning Grammar School’s commitment to its workforce, and it therefore follows that one of my key commitments is ensuring that our teachers and support staff are able to utilise existing technologies in a way that allows them to continue to engage, excite and educate our students.

### Technology and Afl

Over a decade ago, Dylan Williams used the analogy of a pilot navigating between London and Glasgow: “Just as a pilot guides a plane toward its destination by taking constant readings and making careful adjustments in response to wind, air currents and weather, so a teacher within and across lessons must check whether and to what extent students understand what they need for the destination or end-of-unit

assessment.” With regard to Assessment for Learning, this is all about improving learning outcomes by focusing on what happens inside the ‘black box’ of the classroom. A decade later, students are bringing their own black box into the classroom in the form of their own technology – smartphones, tablets and iPads to name a few – the question is: how do we make best use of these boxes?

In my presentation at Bett, I will explore the ways in which staff at Steyning Grammar School have begun to re-imagine the learning activities that we design for the classroom. Taking advantage of a time when learning activities and schemes of learning are being re-designed to fit with the curriculum changes, this session will provide practical examples of how emerging technologies can increase the speed and efficiency of feedback loops, secure student engagement, and reduce teacher workload.

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# dux for iPad

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Network Engineer - Glenview, IL School District 34. USA

"I took a new iPad with no dents or scratches and put it into a DUX case to test it out. I recreated some of the most commonly seen iPad 'accidents', from knocking it off the desk to dropping it while walking. We even threw the iPad 40+ feet into the air a few times onto a concrete floor to see how it would cope. To our surprise, the iPad was still working fine!"

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# SMART PROTECTION

STM cases and bags will keep precious gadgets safe from damage – even in the toughest classroom environment...

STM makes a wide variety of products designed with the educational environment in mind. With direct feedback from educators, it has developed tablet and laptop cases built to withstand the requirements and rigours of the classroom. STM also has a full line of shoulder bags and backpacks to carry and protect digital gear, books and daily necessities. ID tagging and custom logos are available as well.

## The dux difference

A "dux" in STM's home country, Australia, refers to the best student in class, the one who scores the highest on every exam. As the name suggests, STM has developed a best-in-class solution with the dux line of protective cases for iPad, MacBook, Microsoft Surface and more. Each offers rugged protection without bulk, clever combinations of materials, and a few added features for extra credit.

The hallmark of every dux case is the clear-back design, allowing your devices to be asset tagged/ barcoded without the need to remove the case. The light yet tough construction – which passes military-spec drop tests – is designed to protect your devices from the challenges of the classroom environment. However, unlike other rugged cases, the dux

is easy to install and remove: no tools are required and they fit nicely into charging carts.

Every iPad user can benefit from dux. All dux for iPad cases feature a patented magnetic cover that folds into a stand for both typing and viewing.

For schools using the Microsoft Surface/ Surface Pro, dux has yet another benefit: an integrated infinity stand to accommodate nearly unlimited viewing angles for typing and drawing.

MacBook users, meanwhile, can sport a clamshell dux design, which provides bump protection for the lid and base of your laptop without obscuring any ports or vents for cooling/connection/charging.

## Ace in the pack

If you're recommending a student – or staff – bag, the STM ace is an excellent answer. Designed with direct feedback from educators, the ace is the ultimate protection for laptops, tablets and much more. Like dux, ace offers military-grade protection – passing a drop test involving 26 drops from over 1.2 metres high.

The ace's highly protective design suspends laptops (up to 13in) within the bag and encapsulates them in closed cell foam,



while cables and charger are isolated in a removable pouch.

It may be rugged, but the ace isn't bulky: its lightweight, slim design makes for an easy and comfortable carry. Need more space? Its unique webbing attachment system allows for additional accessories, such as a tablet pouch.

Finally, the ace is made from super-durable, water-resistant materials, and is designed to be easily customised with school branding/logos.

STM has more than 18 years' experience of protecting digital cargo. If you're looking for smarter ways to protect your technology investment – and ultimately save money – you need to talk to their education experts.

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# LapSafe®

Denise Crouch brings us up to date after an exciting year for LapSafe

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**T&I: LapSafe had a big launch at Bett 2016 – how has the past 12 months been for the company?**

DC: At Bett 2016, we launched the new indigo range of space-saving storage and charging solutions. The range consists of a hub, wall, and desk units with two mobile carts. Sporting a new indigo colour scheme, with aluminum look trim panels, and secure aluminum shutter doors, the range was specifically designed to maximise working space.

Since the launch in January, the indigowall unit is fast becoming the best seller within the range as it takes up so little wall space and being only 210mm slim it doesn't stick out far from the wall. It is extremely popular with primary and secondary schools where space is a premium and where easy device management is a must. We are seeing more and more schools taking advantage of flexible learning spaces and moving away from the traditional classroom or IT suites. This range helps to securely manage their IT without being intrusive.

**What are the key issues schools have to consider when planning storage and charging solutions for mobile devices?**

There are a couple of key areas for schools to consider when planning storage and charging solutions for mobile devices. Easy device management is key with quick and easy set up time and no messy cables is an absolute must. Learning time is precious, so teachers and ICT technicians like our ultra-safe SmartLine™

charging – low voltage built-in charging cables specific to the device, eliminates the need for AC adaptors in the trolleys or cabinets. Security is still a big issue within schools, so when choosing a storage and charging solution it is important to think about protecting against theft. Choose a steel trolley or cabinet that has been fully welded to eliminate weak points and one that has anti-jimmy plates fitted to the top and bottom of the doors to resist attack. Piano style and/or shatter proof hinges are advisable, and choosing your storage solution with high security locks is also a requirement.

**How are LapSafe products especially suited to an educational environment?**

Over recent years lots of 'copycat' laptop/tablet charging trolleys have flooded the education market since LapSafe launched the first ever trolley way back in the year 2000. The original concept and brief was to design a cabinet for a local school that was safe, secure, provided power and connectivity for laptops in volume.

Twenty years on, we now support all types of devices used within the education sector in the UK and around the world. LapSafe is well known for its excellent power management solutions along with quality products that offer sustainability. We design and build products to withstand the test of time allowing customers to upgrade as their needs change whilst offering value for money.

**Are there eco-benefits for schools in choosing LapSafe?**

Our flagship Mentor™ range incorporates our SmartLine™ power management system, which allows devices to charge without the need for AC adaptors. This system ensures that all devices charge simultaneously in the fastest possible time without the risk of tripping fuses. SmartLine comes complete with PowoSaves as standard which means that when the devices inside are fully charged, PowoSaves automatically turns off its internal power supplies rather than dissipating wasted

electric as heat. Charging is automatically reinstated when required by the devices. This feature alone will recover the cost of the cabinet in a short space of time in saved electricity.

**Can you help schools design a bespoke solution for their mobile computing offer?**

We have our own inhouse design and development team who are constantly engaged in research to further extend our range. This provides us with the ability to cater for bespoke solutions based around storage and charging. Our ethos is one of innovation, quality and customer service.

**Do you have any plans for Bett this year that you'd like to share with T&I readers?**

The popular ClassBuddy™ range has just got bigger! The ClassBuddy offers an unrivalled and cost effective solution to store, charge and even update or synchronise your devices. Its unique power management incorporates soft-start, surge and residual voltage protection as standard. This trolley range now has two new additions: a wall and desk unit. Both will be on display at Bett 2017 along with the rest of the ClassBuddy range.

We are also excited to be located in a new location for 2017 and you can find us on stand E350. Here you can also pick up our #IWannaWin competition cards, with a chance to enter our daily prize draw. Our website [www.lapsafe.com](http://www.lapsafe.com) has more information about our competition and what other products will be on display at the show.





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## PowerTray



The PowerTrays come in two sizes - a deep tray and an extra deep version, and can each store 10 tablets.

## PowerTrolley



Silver White Frame Power Pink Power Blue Power Yellow

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# SECURE SOLUTIONS

As the demand for digital technology in the education sector evolves, Gratnells has developed a smart response

**BETT STAND  
NUMBER: A320**

**Gratnells**



Gratnells, best known for 40 years of designing, manufacturing and marketing advanced storage systems, has developed a smart, responsive approach to meet the increasing demand for digital technology in schools and colleges.

The company has used its in-depth knowledge of the education sector to react to this rapidly growing trend, applying its expertise in providing storage systems, good order and management of physical space.

The launch of the iPad in 2010 enabled students and teachers to create unique opportunities for personal learning at every level. Tablets have become a bridge of information and today's children are born into a world of 'digital immersion' through the power of touch, motion and sound.

## Versatile accountability

Gratnells has responded to this universal adoption of technology in the education environment with storage systems that are compact, lightweight and versatile and compatible with current school furniture. PowerTray F2 (deep) and F25 (extra deep) Charge models are available in both Charge Only and Charge and Sync and continuously analyse the appetite for power from digital devices, responding with an optimised rate of charge and syncing between them to produce a complete management system, besides offering secure, efficient storage and availability.

Where the technical skills set of students often surpasses that of their teachers and lecturers, the need for elements of good stewardship and control remain paramount. Product innovations such as the PowerTray/PowerTrolley deliver all the benefits of digital resources while retaining proper

accountability for equipment, along with 'regulated' access and guaranteed readiness of the devices.

## Find out more

For more information, call **01279 401550**, or visit **[powertray.gratnells.com](http://powertray.gratnells.com)**



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# AIM TO ACHIEVE

Improve assessment and outcomes with the help of award-winning eLearning provider bksb

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access to Exam Practice materials which are designed to help them prepare and revise for their final exams.

Each student has their own homepage where they can access their learning in school or from home, on PCs, tablets or mobile devices. This means GCSE Achieve can be used to raise standards either within a structured classroom environment, or on a flexible basis as additional homework or revision. GCSE Achieve is also invaluable for teachers and heads of department. They can access detailed reports for individuals or groups to check on their progress and generate evidence for Ofsted inspection.

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# GUIDE THEM TO SUCCESS

Education expert Gill Rowell  
has some tips to inspire  
independent learning in  
secondary school and beyond

**A**ristotle said, "The roots of education are bitter, but the fruit is sweet." That promise is hard to convey to young minds that come alive in the moment and nod off when asked to consider long-term payoffs. Engaging students in their own success takes dedication and creativity. Teachers and students seem to thrive when they connect on a personal level and focus on the learning process, not just the result. The goal is to empower students to become intrinsically motivated, independent learners, which is critically important for relevancy in today's (and presumably tomorrow's) workforce.

The Internet and rapid advances in technology have disrupted classrooms in both exciting and unsettling ways. Education reformers and educators hotly debate how to leverage new opportunities while grappling with the associated new challenges. Among the most common and daunting challenges facing today's educators across disciplines and stages is the need for better information literacy and more support for teachers. Teachers are stressed by having too much to do with too little time, and they report that students often are disengaged and prone to lazy thinking that often results from the immediacy of the Internet.

Following are some words of wisdom gathered from educators about how they keep their sanity among all the upheaval in today's schools.

### Tip #1: Embrace the big picture

Often, when students disengage at school, it stems from reasons at home, beyond a teacher's control, but there's growing evidence that inquiry-based learning, supported by positive teacher guidance, can engage students in the kind of learning that can last.

While it's important for students to be able to meet course requirements and pass their GCSE, AS, and A-level exams, it's arguably more important for them to want to learn and know how to share their knowledge. That requires being able to research, evaluate, and communicate information effectively. In the midst of pedagogical upheaval, it can be calming for teachers and students to focus on personalising lessons and projects so that the process of learning is meaningful.

### Tip #2: Personalise learning to advance critical thinking

There are many methods to help students broaden their skills and deepen subject knowledge, as well as develop the thinking skills that form the foundation of academic inquiry and analysis. At the KS4 level, the exam board determines much of the syllabus

## "Teachers and students seem to thrive when they connect on a personal level and focus on the learning process, not just the result"

content to be covered, though educators have some liberty in what sequence they cover topics and how to connect lessons to personal student interests. The expectation is that students will learn specific content, and when they move on to sixth-form they will delve deeper to more fully grasp the content and concepts.

Many sixth-form schools now offer the EPQ, or Extended Project Qualification, as one way to broaden, deepen, and personalise learning. According to AQA, one of the government-recognised examination boards, higher education institutions and employers are increasingly recognising the EPQ as an esteemed achievement of independent research and critical thinking.

Radley College, for example, an independent boys' school in Oxford, recently made it a requirement for all sixth-form students to sign up for either the EPQ or the Pre-U Global Perspectives qualification. "We think it's a really good way of developing the students' research skills and ability to work independently," says Kevin Mosedale, Head of Curriculum Extension at Radley.

Both qualifications teach similar independent learning and research skills, including how to analyse, write, and communicate effectively, but Mosedale says that, in this first year, more students are signed up for the EPQ. "It's not just an add-on," he insists, "it's a very meaningful qualification that prepares you for the next stage of learning."

### Tip #3: Help students take ownership of their success

Any long-term project that requires time management and organisation skills, like the EPQ, can be frustrating for students. Mosedale says students really enjoy the idea of a personal project, but find it to be quite a challenge. The end goal, he explains, is to develop independent learners - but they need support along the way.

Whether teaching students big ideas, like the value of hard work and academic integrity, or very specific skills, such as how to cite sources using Harvard referencing, it's important to remember that students learn in the context of relationships. So improving the dialogue between a student and a teacher can determine whether a student merely checks off requirements or gains real knowledge and

insight that can open doors to further and higher education.

In a student survey conducted by Turnitin, researchers found that 70 percent of students find written or typed feedback very or extremely effective. Also, students report wanting constructive feedback on their work and suggestions for improvement, not just praise. The big takeaway from the survey is that teacher feedback matters. It's one of the best ways to engage students, if it's positive and authentic. Instead of saying 'Good job,' teachers can acknowledge the effort and ask thought-provoking questions that stretch their students' imaginations.

### Tip #4: Measure progress but focus on people

To help students reach their potential as independent learners, educators need to have an idea of a student's initial starting place and the unique situations and abilities they bring to the classroom. They also need to be able to track progress over time.

It's important to standardise assessment criteria across a school and ensure that they are applied in a fair and consistent way. This is particularly true with complex projects such as the EPQ. Standardisation supports, including professional development, are available through organisations such as AQA. There are also a variety of technology tools available to streamline marking, teacher-student dialogue, and assessment.

Schools are learning communities. While measurement tools can help provide important insight into the effectiveness of educational programs and teaching methods, it's important to keep in mind that learning happens in the context of relationships. To nurture lifelong, independent learners, improve the conversations and connections.

To find out more please email [growell@turnitin.com](mailto:growell@turnitin.com).



## ABOUT THE AUTHOR



**As Education Manager for Turnitin, Gill Rowell is responsible for building relationships with academic colleagues worldwide in order to promote and initiate conversations about academic excellence and integrity.**

littleBits™ education

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# BITS OF BRILLIANCE

Introducing a powerful toolbox for invention-based learning that's designed with educators, easy to teach and fun to use

The call to supercharge STEM and STEAM education has been heard, loud and clear. Now littleBits, the technology startup that is empowering everyone to create inventions, large and small, with its easy-to-use platform of electronic building blocks, has launched the littleBits STEAM Student Set – a toolbox designed with educators to engage students in powerful STEAM learning through invention.

As STEM education becomes a national priority, the need for innovative educational tools is stronger than ever before. STEAM adds art and design to STEM studies, encouraging students to learn by inventing, creating and designing. With the littleBits STEAM Student Set, educators now have a fun and exciting way to bring STEAM into their classrooms

## Challenge and explore

The littleBits STEAM Student Set engages a student's natural love of play and curiosity through invention-based learning. Each toolbox supports students in years 4 to 9 with 19 Bits – littleBits' electronic building blocks – and 38 accessories to bring buzzing, blinking and creative inventions to life. A littleBits Teacher's Guide provides hours of detailed

companion lessons, curricular connections, implementation strategies, and helpful tips, while a mobile app provides thousands more ideas for the classroom.

A 72-page Student Invention Guide contains guided invention challenges with step-by-step instructions, from "Invent a Self-Driving Vehicle" to explore the concept of friction, to "Hack Your Habits," which encourages students to track their habits and invent something to improve their daily lives. An Invention Log worksheet encourages student reflection and documentation; for example, when students are challenged to "Invent a Throwing Arm" with littleBits, they'll experiment with forces of motion and simple machines, and will be asked to systematically document their progress.

Following the success of the award winning littleBits Gizmos & Gadgets Kit, recommended as the "ultimate invention toolbox" by The New York Times, The Wall Street Journal, TIME and WIRED, littleBits turned its attention to education, aiming to address some of the challenges that educators and administrators were facing when trying to integrate STEAM into their classrooms. With over 12,000 educators and 2,200 schools using littleBits, the company designed the STEAM Student Set so that any educator,



whether they have prior technical skills or not, could bring STEAM into their classroom in a fun and engaging way.

## Out with the old

"We believe that STEAM is essential for every classroom and every educational program," says Ayah Bdeir, founder and CEO of littleBits. "Students need to be prepared for jobs and careers that quite frankly don't even exist today. Rather than rely on outdated, top down models of instruction, we need to better engage and excite kids through relevant, invention-based learning, to help them become the creative thinkers, collaborators and curious lifelong learners who will change the world. littleBits wants every student to have the technology literacy and problem-solving skills to create their own inventions, whether it's a device to assist someone with a disability, an arcade game or a new household gadget. We're working with educators to provide a way for anyone, regardless of their technical ability, to bring STEAM and STEAM into the classroom in a highly impactful and engaging way."

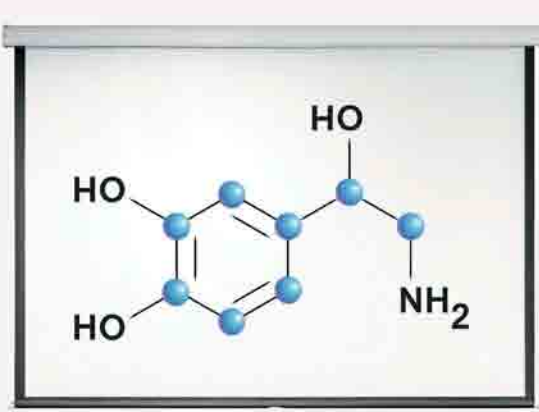
Each littleBits STEAM Student Set contains 19 electronic 'Bits', 45 accessories and the invention guidebook – plus the Teacher's Guide and companion app for endless inspiration. Great value Class Sets – combining four or more Student Sets, plus storage – are also available.

Discover more online at [littlebits.cc](http://littlebits.cc)





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Q&A  
A/V

# Kramer

Nick Mawer considers how the right A/V solution could maximise collaborative learning

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**T&I: Why are effective A/V solutions so important in the education sector?**

NM: AV solutions for education are rapidly evolving from merely presenting passive visual information to actively engaging students in creating their own learning. The growing culture of app-driven solutions is creating intuitive technology that support both small groups working collaboratively – which drives better academic achievement – and which enable the whole class to be active in the learning – thereby underpinning student wellbeing within a vibrant social and emotional learning environment. AV technology is now a key enabler for both these requirements.

## How can your technology support collaborative learning?

Kramer's VIA technology enriches learning by supporting connectivity and collaboration from almost any mobile devices (iOS, Android, Mac, Windows and Windows Phone, Chromebook), ensuring that no student is excluded from their learning. The same app allows connectivity for collaboration in many different learning scenarios, each of which are typically found on any campus; small group huddle, active learning classrooms, traditional



classrooms and even in the school hall or lecture theatre. For all these environments, there is a Kramer VIA solution to engage every student in collaboration with any rich media from any digital device.

## Surely this kind of equipment is beyond the budget of most secondary schools?

Budgets are not just consumed by the upfront purchase of technology, and whilst Kramer's VIA Go is one of the best value systems around to purchase, the reduction of hidden costs for implementation and support are also a key feature of all Kramer VIA solutions. Having one technology solution that works in the same way in every learning space is another way that these hidden costs are significantly reduced. Today's students learn in many ways, and the many costs of not providing environments that engage students and drive their learning forward is a far greater one.

## Are you able to work with schools to come up with bespoke systems?

Whilst the Kramer range of products are supplied through a nationwide network of



systems integrators and re-sellers, our team of VIA experts can be on hand to assist our integrators with larger or more complex projects.

## What sort of support do you offer once installation is completed?

Again support is offered firstly through the systems integrators, and we support them in turn with training and technical support should any issues come to light. Our VIA products have a hardware warranty for three years and software for one year. The one-year warranty on software can be extended at any time by one or two years to a maximum of three years. The extended warranty covers any firmware updates, bug fixes, new feature introductions or upgrades to deal with changes to third party applications.

## What plans do you have for your stand at Bett this year?

We will be showing anybody who comes along how our application of "bring your own device" technology can facilitate and enhance the learning experience.





# LEVELLING THE PLAYING FIELD

Life after levels is looking very positive indeed at Horndean Technology College, as **Nigel Sheppard** explains...

**L**evels were introduced with the national curriculum in 1988, with the intention of delivering an assessment system that measured pupils' progress against a national framework. In 2014, however, levels were removed to allow schools greater autonomy to boost pupil attainment and mastery. The removal of levels from the national education policy has now given schools the freedom to develop their own assessment and progression monitoring structures. However, this freedom has come at a price; schools now have to establish their own tracking solutions for monitoring achievement to ensure their students' needs are effectively being met.

Giving attending educational professionals a chance to reflect on their current practice

and consider ways in which they may wish to develop, I will be giving a presentation at Bett designed to show the real, live implementation of an effective Assessment Without Levels (AWL) solution and an innovative approach to the Mastery Curriculum and assessment.

## Development and growth

Horndean Technology College, where I am deputy headteacher, is a successful state-maintained school with around 1,300 students – although a 'broadly average' intake, the school attains above average results. It was rated as 'good' by Ofsted in February 2016, with many 'outstanding' features including its curriculum and use of data. Like many, I have seen hundreds of different ways secondary schools have

attempted to tackle the notion of AWL and feel the approach I am developing is robust and flexible, enabling it to grow as the curriculum evolves.

When AWL was first introduced, I held a meeting with all subject leaders. They were strongly against the proposed changes and the notion of implementing them without due process, which led to the creation of two working groups to help research and develop alternative options. In the meantime, the school kept the old Key Stage 3 assessment processes and levels, while information and ideas were coming through. It was not long after this, at Bett 2016, where I saw the new SIMS Programmes of Study feature.

At Bett 2017, I will outline how the Programme of Study Tracker works and



how staff were trained, developed and took ownership of their own assessment systems. Every department has their own assessment policy, so they've got that autonomy. It's not important that we all do the same thing, but it is important that assessment gives feedback and ways to improve. Each subject leader needed to transfer their curriculum into a meaningful way of assessing it, which the Programme of Study Tracker has made possible. I always emphasise to staff the importance of getting the balance right when it comes to assessment, as it's not about using hundreds of statements that you'll never be able to assess on a daily basis, but giving enough information and rigour to the assessment so that it's meaningful. This allows you to change your practice and get a good idea of where the students are.

### Looking forwards

SIMS Assessment also helps to give an insight into staff performance. Our subject leaders were thrilled that they could see each of their teachers and their strengths and weaknesses. They can easily identify any particular skills or concepts that are strong or weak, either across a cohort or class, and can then tailor that curriculum and respond accordingly. This is something I'm genuinely excited about.

My session will also look at the future, or what I call 'Phase 2 and Phase 3 developments'. We wanted to use the strands and statements in SIMS Assessment to help students take ownership of their own learning. The school currently has each strand and statement in their VLE and these are linked with different resources to help students understand if they're emerging, developing, secure or mastered. These resources range from Word documents and Excel problems to YouTube videos, as well as those made by the staff and students themselves. Mirroring what's in SIMS with



resources to help children learn those skills independently is quite exciting. The staff have done some brilliant things with the links and some have made their own videos to generate flipped learning and forward-looking assessment – this allows them to be really creative.

As well as giving grades and comments, students and parents can see specific curriculum areas, skills or knowledge where

they are weak and can use the linked resources on the school's VLE to independently improve, thanks to reporting, which is the next phase for Horndean. This has even led to the school changing its approach to homework to 'DIY' and, with the help of the SIMS Programmes of Study Tracker, the school is on track to ultimately help improve understanding, knowledge and student outcomes.



**“DON'T MISS THIS!”**  
**NIGEL SHEPPARD**

**○ Nigel Sheppard, deputy headteacher, Horndean Technology College Assessment Without Levels using SIMS Programme of Study Tracker and embedding the Mastery Curriculum**

**Learn Live: Secondary, 15.00  
Thursday 26 January**



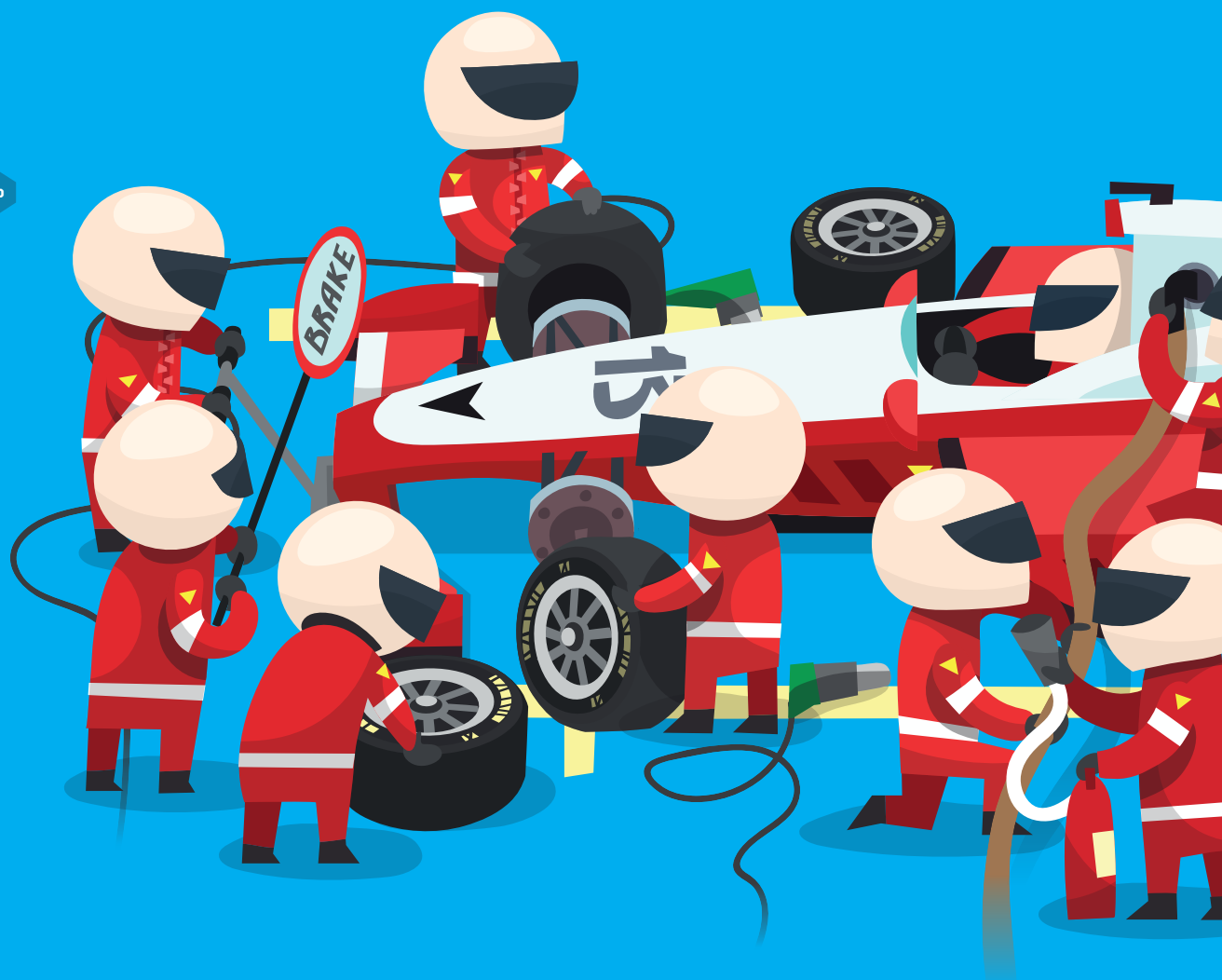
# RACING AHEAD

Claire Williams explains how the heady thrill of Formula One can fuel a passion for STEM subjects in young people, regardless of gender...



On Thursday 26 January at 12.30pm in the Bett Arena, I will join founder and chairman of F1 in Schools™ – of which I am patron – Andrew Denford, and Sky Sports broadcaster David Croft, to discuss how Formula One (F1) can be used to encourage young people into science, technology, engineering and maths related activities, and also to recruit the very best engineers.

I was appointed deputy team principal of Williams Racing in March 2013. My role in the sport has naturally led to a lot of attention around women in Formula One, as Sauber's Monisha Kaltenborn and I are the only female team bosses in the sport; and I was delighted to have been awarded







an OBE earlier this year. However, despite the way that other people seem to want to focus on my gender, this is something that I have never felt is an obstacle to success in the sport.

As an ambassador for the FIA's Women in Motorsport Commission, I hope that I will be able to have a big impact on recruiting more women into not only motorsports, but also associated STEM careers. At Bett, I will speak about my partnership with F1 in Schools, and how I have seen it benefit not only girls, but young people in general, by improving their learning capabilities and career prospects.

F1 in Schools Ltd is a not-for-profit company established with committed partners to provide an exciting yet challenging educational experience through

the magnetic appeal of Formula One. Offering an exciting way to learn STEM related subjects, F1 in Schools has already seen great results, and is helping to increase the intake of students into engineering careers; it is the largest and most successful school-based STEM programme in the world.

### Career skills

As I have witnessed, competing in F1 in Schools gives students aged 9 to 19 years of age a unique opportunity to develop key skills such as communication, presenting and team work, which will form the foundation of their future in any career path they choose to follow. Working in teams of between three and six, students follow the same processes real Formula One teams follow from their

initial business plan through to their car design. They use Computer Aided Design (CAD) software, data analysis using CFD and drag calculation software, Computerised Numerical Control (CNC) machinery to manufacture their cars, and wind and smoke tunnels for testing. Finally, they race their miniature compressed air powered model block F1 car on the 20m F1 in Schools race track to see who has designed and manufactured the fastest car.

Also at Bett, I am looking forward to speaking to six students from a school in Hampshire who recently came fourth in the F1 in Schools' World Final, about how their view of STEM subjects has changed since taking part in the initiative, and how they feel it will impact their future careers.

"It is the largest and most successful school-based STEM programme in the world"

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### Team players

Williams is one of the world's leading Formula One teams, and its name has been synonymous with top-level motorsport since the 1960s. Sir Frank Williams, Claire's father, founded Frank Williams Racing Cars in 1966 and went on to establish Williams Grand Prix Engineering with British engineer Patrick Head in 1977. They built their first car, the FW06, the following year and the team immediately went from strength-to-strength. Williams has since won 16 FIA Formula One World Championship titles, nine Constructors' and seven Drivers', and is the third most successful team on the grid.



**"DON'T MISS THIS!"**

**CLAIRE WILLIAMS**

○ Claire Williams, Andrew Denford, David Croft  
'F1 in schools'

Bett Arena, 12.30  
Thursday 26 January

# INSPIRED INTERACTIVE SOLUTIONS FOR INSPIRED YOUNG MINDS



## INTERACTIVE LARGE FORMAT DISPLAYS:

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- No shadows or reductions in image performance to contend with
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# iiyama

Steve Kilroy, UK sales manager at iiyama, introduces  
interactive teaching solutions for education

**VISIT: [WWW.IIYAMA.COM](http://WWW.IIYAMA.COM) CALL: 07891864665 EMAIL: [S.KILROY@IIYAMA.COM](mailto:S.KILROY@IIYAMA.COM)**

**T&I: What are the main benefits for teaching and learning of having good quality touch display in the classroom?**

SK: The classroom environment is rapidly becoming a fully digital workspace for both teachers and students. The main focal point of the classroom remains with the teachers making their lesson plan and activities fully visible to the class via some kind of display be it a projector or interactive LCD Screen. The ability to interact with this content is key and even more important is to have interactive displays that represent your annotations, notes, activities and ideas flawlessly and reliably. iiyama Interactive LFD's (Large Format Displays) guarantee the most impressive and vibrant display with unparalleled speed and accuracy for multiple touch points ensuring your lessons will always be inspiring young minds. One critical factor is that iiyama doesn't sell any software. As strange as it might seem, this is actually a benefit to the educational sector. Most of the time schools become enmeshed in complex software, which is a fairly expensive investment, and struggle to use it within a class room. iiyama takes the stance of teaching people to use the interactive and presentation tools available within the Microsoft Office environment, which are easy to use, expand beyond the class room environment into the workplace and best of all... are free.

**Tell us about the range of screens you are able to offer schools – what makes them so exceptional?**

As a manufacturer of displays for over 26 years, our heritage really lies within the desktop monitor sector. However, iiyama has always sold interactive displays and has expanded to include a superb range of large format interactive solutions for the education environment ranging from 42"-86". Any user of iiyama products will testify to the quality, clarity, brightness, depth



of colour and speed of response on our displays. For iiyama, it is about demystifying the oversold educational software solutions, instead focusing on delivering content quickly and easily using software teachers are already familiar with. iiyama's part in the solution is to provide stable and high quality hardware. Lastly, the iiyama screens do come with a very basic Android operating system, offering annotation and media play back functionality to enable teachers to start working without the need for a laptop device to be connected.

**Why do you think it's important, as a company, to have a presence at the Bett Show?**

The BETT show represents a unique opportunity to present the full scope of iiyama displays to a huge audience. iiyama engage in a constant process of evolution and development and its very interesting to hear feedback from stakeholders in the educational community. As we don't offer a software suite, we really heavily on the comprehensive

range of interactive and presentation solutions supplied with Microsoft Operating Systems and Office suites. Therefore the BETT show offers a great chance to educate teachers and help demystify and at times simplify the interactive presentation environment found in most educational institutions. We constantly hear from innovative staff who use Microsoft packages and often learn new methods of using the software packages that are useful and relevant to the educational sector. iiyama initially we developed Touch Screens for commercial interactive signage use and it was the feed back from visitors at the BETT show around 5 years ago, that forced iiyama to keep the same high end commercially built touch screens and redesign them into a more teacher friendly product for the education and presentation sector.

**How are you going to entice visitors to your stand this year?**

iiyama don't do marketing gimmicks, we focus on presenting our products and allowing the quality to speak for itself. What draws people to the stands where iiyama will have demonstration equipment, is the brightness and clarity of the displays. Furthermore, people see us using the intuitive and easy to use tools such as Onenote and Power Point and often kick themselves that they did not know they already had such a strong suite of solutions and did not need to invest in further software. However, that always seems to pull people onto our demo zones with a questioning look in their eye's. I think we simply have a unique and unforced method of showing our solutions, we don't want to opt for the hard sell approach, its very much about understanding the needs of the clients and guiding them down the right route. Even if that route is not iiyama. Many people have different software demands and we simply show them how to make the best out of the comprehensive solutions they have already got, and probably did not know they had.



## ONE YEAR ON

Over the past 12 months, nearly one million Year 7 UK students have got their hands on the BBC micro:bit – so what happens now?

**Zach Shelby** brings us up to date...

### What's it all about?

The micro:bit Educational Foundation enables children around the world to get creative with technology and be inventors in school, in clubs and at home. The micro:bit is a handheld, fully programmable computer given to every Year 7 child across the UK, and now being used around the world. It's 70 times smaller and 18 times faster than the original BBC Micro computers used in schools in the early 1980s. Started by the BBC and a great team of partners, the micro:bit Education Foundation is a non-profit organisation, of which Zach Shelby is CEO.

**T**he micro:bit is a learning platform that the BBC started about two years ago, with the aim of creating a new technology and learning experience for young people. It stems back from 25 years ago when the BBC Micro was created to teach people about personal computing in the 1980s.

In today's digital and gaming age, the BBC knew they needed to come up with something which would get more children interested and engaged in technology. The result: the BBC micro:bit.

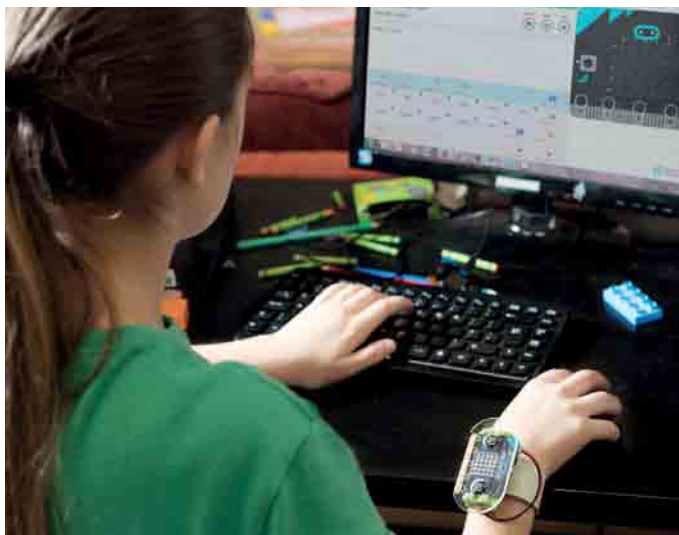
As I'm sure many people are aware, the micro:bit is a tiny computer, smaller than the size of the palm of your hand, which

students can interact with to create various different types of exercises and games, using key skills they've learnt in subjects such as maths, physics, biology and chemistry.

It's designed to give students of all abilities the opportunity to explore STEM skills and programming without being intimidating or complicated. Teachers are able to use the micro:bit alongside the curriculum, helping to improve digital literacy and creativity.

Everything is done in the cloud too, making it incredibly easy and fun for students to start coding without even realising they are doing it. Instead, what they feel like they're doing is creating something they're genuinely interested in, whether that be using it to measure something, creating





a game, interacting with a model, or even controlling a phone remotely. These are all things that real kids have done with the micro:bit.

## Creating a community

It's an easy-to-approach solution for education technology and the BBC was at Bett with micro:bit last year for the first time, which gave us an initial idea as to what was to come with the deployment.

Since then, a lot has happened. After rolling it out to one million children in the UK last year, it's been widely successful, and of course the BBC has done a brilliant job in bringing awareness to people in the UK, making it 'cool' and engaging for young people.

We have a very active community; micro:bit has started to spread outside of the UK and is being used around the world, with early adopters in Iceland, Norway and the Netherlands. And just last month, we announced the Micro:bit Educational Foundation, a non-profit foundation that will be taking over all of the activities around micro:bit, creating a platform to enable us to bring it to the rest of the world.

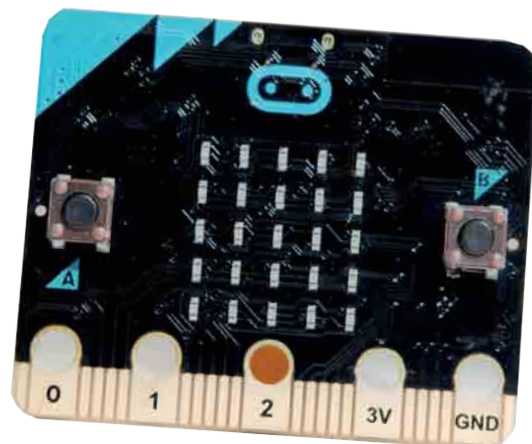
We want to provide teachers, governments and educational organisations with the resources to fulfil their digital educational goals and help improve digital skills across the globe. In my session at Bett, I will share the measurable results of what we have seen so far with the deployment of the micro:bit, how it's been used, as well as how it has positively impacted education. We've seen some really interesting and creative projects as a result of the micro:bit, which I will also share.

## The future of invention

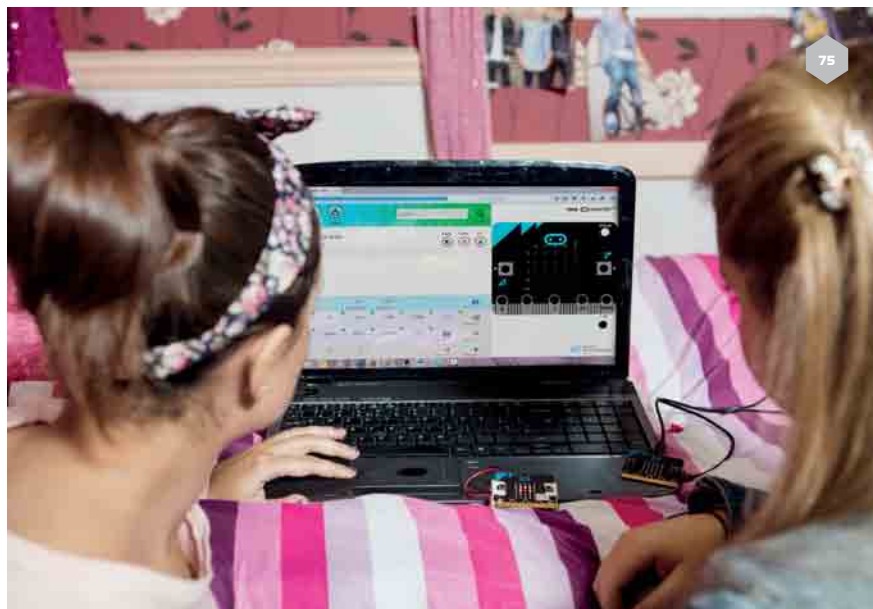
As the CEO of the micro:bit Educational Foundation, my goal is to create a positive and significant impact on students' learning

with technology, rather than simply focusing coding. We see every child as an inventor in the future, and our goal is to reach over 100M people around the globe with micro:bit.

As part of this, we will be helping teachers to understand exactly how it can be



used in the classroom, and what kinds of educational material is already available for them to utilise in lessons, including STEM and computer science exercises. Education technology is a huge phenomenon with endless possibilities and opportunities and we want it to become a worldwide focus. This is what I will be talking about at Bett: global education and what the future holds for education technology.



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**“DON'T MISS THIS!”**  
**ZACH SHELBY**

**○ Zach Shelby, CEO, micro:bit Educational Foundation**  
**'Micro:bit - a year on'**

**Bett Arena, 14.00**  
**Saturday 28 January**



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- Copies of our new GCSE publishing for AQA, Edexcel and OCR Computer Science
- Free tea and coffee with a dash of expert advice from our representatives



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# COMPUTER SCIENCE SUPPORT

Leading computing author and examiner George Rouse explains how Hodder Education is supporting progression from Key Stage 3 to GCSE computer science...

**BETT STAND  
NUMBER: C116**



The key challenges facing students taking the GCSE in computer science are programming, computational thinking and the increased maths content. Programming is required in the GCSE offerings from all exam boards. The best approach to learning to program is to start at an early age.

Hodder's KS3 product *Compute-IT* establishes the fundamental programming concepts and provides opportunities for students to code solutions to solve problems. *Compute-IT* comprises three students' books and three teacher packs across the three years of Key Stage 3. These are fully integrated with a suite of digital teaching and learning resources, to provide a cohesive and supportive learning package structured around the key strands of computing.

The new GCSE resources (print and

digital for AQA, Edexcel and OCR GCSE computer science) include code programming basics and encourage students to code aspects of the theory to improve their programming skills and better appreciate the concept. Accompanying Dynamic Learning digital teaching, videos and learning resources provide tasks, activities and planned lessons to support programming concepts and further develop these skills.

Computational thinking is the underlying theme in GCSE and both the KS3 and GCSE products cover this in detail, looking beyond the direct application in computer science to the

general application of these skills in a variety of contexts. The GCSE publications provide extensive coverage of the mathematics requirements with plenty of practice provided through the Dynamic Learning resources. There is also coverage of the required mathematical skills within the KS3 product.

In addition, Dynamic Learning teaching and learning resources at Key Stage 3 and GCSE provide assessment opportunities throughout the course to ensure individual student learning is on track at each stage.

**Demonstrations of how to use Key Stage 3, GCSE and A-level digital resources in your planning, teaching and assessment, together with advance sample material for the new GCSE specifications will be available at the Hodder Education stand.**

For more information, visit [www.hoddereducation.co.uk](http://www.hoddereducation.co.uk), call 01235 827827, or email [education@bookpoint.co.uk](mailto:education@bookpoint.co.uk)



Q&A

## WISHTRAC

**BETT STAND  
NUMBER: C449**

Paul Strongman, director of Wishtrac, wants to give you a Hovercam Visualiser...

**VISIT: [WWW.THEOVERCAM.ORG.UK](http://WWW.THEOVERCAM.ORG.UK) CALL: 08000 80 77 80 EMAIL: [SALES@WISHTRAC.COM](mailto:SALES@WISHTRAC.COM)**

**T&T: Which products are you particularly showcasing at Bett this year?**

PS: Wishtrac will be demonstrating the range of HoverCam Visualisers. These include an entry level model, the Z5, the flagship HoverCam Solo 8, and for those who require output direct to HDMI or VGA, the HoverCam Ultra 8. New this year we will have the Splashtop wireless tablet solution, and show how the HoverCam can look down a microscope, even measuring cell-length with a graticule eyepiece.

**What makes the HoverCam range different from other visualisers?**

Firstly, it's the functionality of the Flex 10 software, which can take photographs, record full HD video, annotate images, take time-lapse

photographs and scan images to PDF.

Secondly, it's the image quality. The HoverCam Solo 8 is the world's first true 8 megapixel visualiser - the only one that gives a full HD image, at 30 frames per second, via USB 3.0. With no compression, there is no time lag or image blurring. The Solo 8 shows A3 documents in fine detail, and displays details of small artefacts that the naked eye can't see. It can also look down microscopes.

**What kind of advice can you offer teachers?**

We can help teachers find the right visualisers for their needs, showing them the powerful, intuitive

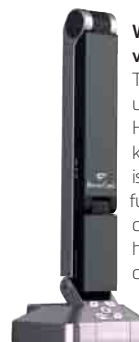
Flex 10 software that works across all of the HoverCam models. We can answer any technical questions, and give advice about how the HoverCam visualisers can support teaching and learning, such as via a 'flipped classroom'.

**Why should everyone make sure to visit your stand?**

They say seeing is believing. Well, until you see the quality of the HoverCam Visualisers, you won't know how good the image quality is, or how many functions they can fulfill. Once you've seen what they can do, you'll want one, and we have a free-to-enter competition at the show (Bett Stand C449) to win a HoverCam Solo 8 Visualiser worth £440.



**HoverCam**



# Easy as PI

Too many schools are still searching for ways to make STEM engaging, says Jesse Lozano – but the answer could be more simple than they realise

I co-founded pi-top (pi-top.com) with the belief that the majority of teaching resources that engage and teach secondary children science, technology, engineering and maths (STEM) subjects, were in drastic need of improvement. The pi-top ecosystem delivers STEM subjects in a highly absorbing cross curricular way; using physical computing combined with coding and lesson plans to bring fun and real engagement to the secondary classroom.

There is currently an ethereal understanding of what STEM is, with a vast amount of products and services that are helping neither teachers nor students reach their true potential. My teaching concept addresses the reality that sadly in secondary schools there are very few examples of 'real' learning. Just building a game may make schools feel they have ticked the 'computing and STEM box' – but this is not enough to drive the need for STEM prodigies.

## Affordable, accessible

There are tens of thousands of data scientist and computer-based jobs that go unfulfilled in the EU, and this is something we could solve if we were to make STEM based curricula more interesting in the classroom. When you utilise pi-top and Raspberry Pi in the best way then you actually start to make a difference. Literally what we want to do is change the way people learn whilst sticking to curriculum realities.

This reluctance to teach is understandable; STEM edtech resources can take an hour to set up and another 60 minutes to dismantle – something that few teachers have time to do – and many are prohibitively expensive for the average school. Teachers need a clean platform that can simply be put on the table and be ready for use within five minutes.

“Just building a game may make schools feel they have ticked the ‘computing and STEM box’ – but this is not enough...”

I am interested in affordable technology and how it can be used to transform STEM based education across the world, by making it more stimulating. By focusing on incorporating STEM into traditional subjects, learning can be more entwined and applicable to the lives and careers into which students will grow. Children are being taught basic coding in primary school but by the time they get to secondary school, the learning activities are often simply not engaging enough to inspire them and the content becomes much more complex.

## Helping hands

Many schools have invested in resources such as iPads with the belief that these will automatically bring STEM subjects into the 21st century; when the reality is that all too often, they are simply used to display pdf files instead of offering the type of interactive, hands-on learning that students really need.

pi-top's feature products are classroom ready Raspberry Pi laptops and desktops schools and students can build and customise themselves; fitting its motto of 'Learn, Play, Create' perfectly. In my session at Bett, I will be talking delegates through the process of how students can build circuits from simple LED projects through to anything from heart rate monitors to weather stations whilst learning how to code and gaining core STEM skills. pi-top's goal is to teach students effectively from a beginner starting point in computer science through to advanced coding skills, along the way touching on core aspects of traditional sciences and wider STEM skills.

Recognising that many teachers may not be comfortable enough with this technology to adapt it for themselves at first, pi-top includes hundreds of hours of cross curricular activities. Every pi-top user has access to a cloud-based lesson plan repository created by educators from all over the world. Regardless of a teacher's confidence level, these worksheets act as step-by-step guide that take learners from novices all the way to making complex programs and hardware. Teachers can even make their own worksheets and share them with the growing pi-top community.

While the focus is on computing and STEM subjects, pi-top touches on the wider STEM curricula areas. For example, I plan to demonstrate how teachers can apply the technology using an RPG adventure game that teaches you how to code, build circuits, and make hardware that interacts with the game in real-time.

At Bett 2017, delegates to my session are in for a surprise at the end. All around the Arena they will experience an interactive physical element to demonstrate to the whole audience how dynamic STEM can be. Why not come along and see for yourself?



**“DON'T MISS  
THIS!”**

**JESSE LOZANO**

○ Jesse Lozano, co-founder, pi-top

'Making STEM truly engaging, relatable  
and affordable'

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Bett Arena, 11.30  
Friday 27 January



# MAKE IT COUNT!

Not sure how you are going to get the best possible professional value from your visit to Bett? Terry Freedman, a veritable show veteran, has some words of wisdom...





**S**ay 'CPD', and many teachers will think immediately of a really boring training day, or perhaps a visiting speaker. Indeed, the general view of training days is so abysmal that they were immortalised in an episode of the BBC's 'Million Pound Radio Show' entitled 'Pirates' Training Day'. However, although conferences and shows may be equally dreaded, they usually offer the potential for being much more interesting, and far more useful, than the standard INSET day. The reasons are as follows:

## 1. Variety

While a training day is usually focused on one theme, given by one or two trainers, and spent in the company of the same group of people all day long, a typical conference offers much wider opportunities to discover and learn. In this respect, the bigger the conference the better; at the Bett show, there are literally scores of sessions (and therefore presenters) to choose from, on a wide range of topics.

## 2. Up-to-the-minute information

If you're wondering what the next big thing is in education technology, or the latest Government thinking on assessment, or Ofsted's forthcoming new inspection framework, a conference offers a very quick and easy way of acquiring the most current version of this information. You can then use this information to guide your strategy going forward.

## 3. Building expertise

Another thing you can do after acquiring the information referred to above (or other hot-off-the-press insights) is pass it on to your senior leadership team. This will help you to be regarded as someone with 'insider knowledge', and also as someone who can be relied on to disseminate what they've learnt from their day out of school. This may create a virtuous circle, by means of which you are more readily granted the opportunity to attend another conference in the future.

## 4. Products, services and suppliers

Most conferences have an exhibition area in which various products, resources and services are presented. It is well worth spending some time meandering around the exhibition because you may come across just the thing that will solve a problem you've been grappling with. If you are considering buying a particular kind of product, attending a conference and spending time in the exhibition area will enable you to meet and size up some of the suppliers of that product. The answers to the questions you ask at each stand may give you a good idea of intangibles such as after-sales service. With a bit of luck, you'll also learn some more generic facts about the type of product in question.

Bear in mind, of course, that not all conferences are the same. Some, like the Westminster Forum conferences ([www.westminsterforumprojects.co.uk](http://www.westminsterforumprojects.co.uk)), provide variety by having a large number of speakers address different aspects of a topic for just five minutes each. That may not sound like much time, but you'd be surprised at how much information can be conveyed, especially as the speaker has little option but to get rid of any 'fluff' from his or her talk.

Others, such as EdTechX Europe, feature a lot of panel discussions, in which a group of four or five experts give a brief presentation and then answer questions from the audience. This kind of event can provide you with a chance to ask a question that is currently of paramount importance in your school.

Yet others make a feature of keynote talks in which people who are well-known in their field spend thirty or forty minutes giving their latest findings or some insights into their work. This is another great way to get the latest information – some of which may not have even appeared in print anywhere yet. Bett offers an exciting mix of keynote talks, panel debates, seminars and workshops alongside the huge number of exhibitors; meaning that it actually meets most CPD needs. What are you waiting for?

## Your Best Bett: Terry's Top Tips

### Convince the SLT

Many teachers are finding it increasingly difficult to be allowed out of school for a day to attend a conference. If you think about it from your SLT's point of view, as far as they're concerned it will cost the school money (both your attendance expenses and possibly a supply teacher), and the kids' education may be adversely affected by your not being in the classroom.

So, you have to convince them that the potential benefits of the visit, such as the latest information on your subject or being able to meet with suppliers, outweigh the costs. If you can reduce the perceived cost by either attending on a day when you don't teach many classes, or by reassuring the powers that be that extensive work will be set so that the students don't miss out, so much the better.

### Plan your time

Go through the conference programme with a fine toothcomb, identifying the talks that will be of most use to you. If nothing is on that looks especially worthwhile, use the time to visit the exhibition area instead. Get hold of a floorplan, and identify stands that are must-sees (mark them with a green highlighter); and 'could be of interest' (use an orange highlighter for these).

### Register before you go

There are two very good reasons for booking early for any show. First, you may get an 'early bird' rate, which can often represent a substantial saving. Secondly, it will reduce the time you have to spend queuing up to get in. Bett is free to attend, but it's important to register in advance ([www.bettshow.com](http://www.bettshow.com)), or you'll have to do so on arrival, which can be time consuming.

### Take some business cards

Not many teachers have business cards, but they are easily and cheaply sourced from the internet these days, and are essential for conferences, for three reasons. First, professionals in other sectors have business cards, so by having some to give to people you meet you are, in effect, saying that teachers are professionals too. Secondly, rather than lugging home bagfuls of bumf, you can give suppliers your business card and ask them to send you further information by email.

Finally, you may well be invited to use your business card to enter prize draws (who knows, you could win a shiny new iPad...)

### Think of your feet

Seriously – buy comfortable shoes if you don't already have a pair. Walking around all day on a thin carpet over a concrete floor is no joke!



## ABOUT THE AUTHOR



**Terry Freedman is the author of Education Conferences: Teachers' guide to getting the most out of education conferences, available on**

**Amazon at <http://amzn.to/2fcOWOw>, and publishes the ICT & Computing in Education website and the Digital Education newsletter at [www.ictineducation.org](http://www.ictineducation.org).**

# LAST WORDS

After a quarter of a century in teaching, Garry Britton is still kept on his toes by the thrilling possibilities of technological innovation...

It suddenly struck me – I’ve been teaching now for 25 years. And I’m more excited about the job now than when I started. Why? It’s the technology. Excuse me for not saying it’s all about the students – because of course, it is. But what technology can do for students and teachers alike is what’s getting me up in the morning, raring to try out something that will enrich teaching and learning.

There were no computers in my language classroom in 1991. I taught German with handwritten exercises, listening to audiotapes to fill the gaps. What excited me then was VHS video – the most engaging tool at my disposal. Interviews with school children filmed around Munich made the language more personal, more alive, and sometimes, just a little funky. It was a life-saver for a subject most lower abilities struggled with. I struggled to learn how to set up pair work and group activities in a way that would not descend into chaos; when it worked, that too gave me a real buzz.

## Screen time

Satellite TV arrived in my class in 1993. At the flick of a channel I had German news, weather, game shows, advertisements with slogans and jingles. I spent as much time as possible channel-hopping, recording, producing accompanying worksheets and activities (still hand-written). It was a boon for my A level students in particular, learning about German culture in almost-real-time. Their enthusiasm blossomed into persuasion – couldn’t we have a trip to Munich at Oktoberfest time? We did, and I still have the Bavarian feathered hat to prove it. This was followed by our first school exchange for Years 10 to 13, to Northern Germany. The TV youngsters leapt off the screen, became real young people with homes, families and interests. I fancy German became quite cool.

In 1998 I left school teaching to go into corporate language training. In companies, it was motivating to find how much languages were needed and my input appreciated. Business dialogues may not be inspiring for most, but for professionals about to visit Germany or France, they were vital.

And then there was another new tool – my laptop with internet access. It was the ultimate teaching resource; I could read websites with my adult students, watch

news programmes, make use of interactive resources from the BBC. This was the new bit of razzamatazz to enliven a lesson of grammar and vocabulary or reading and writing.

## Fresh visions

By 2003 I was back in the classroom, in Further Education, teaching literacy and study skills. I was amazed to find the internet had supersized itself, projected onto whiteboards for all to learn from. Then came smart boards, with all their fun, interactive elements to keep learners interested.

Still in a Further Education College, I’m now fascinated by the teaching and learning opportunities new edtech provides. VLEs enable communication to flow in rich learning environments; students engage in collaborative writing on platforms such as Padlet or Googledocs; online quizzes and formative assessments give instant student assessment and feedback; resources are shared as games on apps like Quizlet; social media provide chat forums and instant messaging to comment on projects; Twitter creates virtual classrooms; Socrative and Kahoot encourage use of tablets and phones in the classroom, allowing interaction, voting, instant feedback. For the teacher, a tool like Prezi sweeps away the tedium of slides with a dynamic, visual experience.

I’m going to work excited by these new capabilities – and guess what? I’ve gone full circle, back to the engaging experience of video – online, posted and shared, filmed by students and teachers. Nothing, but everything, has changed.

## ABOUT THE AUTHOR



**Garry Britton**  
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teaches literacy and  
study skills, and develops  
the use of technology  
in teaching.



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