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THE LANGUAGE OF SUCCESS

Find out how Linguascope.com is helping schools deliver their language curriculum...

When it comes to online language learning, nothing comes close to Linguascope, an online language learning platform for primary and secondary schools. The resources offered are both student and teacher friendly, which explains their popularity in schools not only in the UK but worldwide. The website is used in over 100 countries across the world, and in the UK a jaw-dropping 80% of the schools subscribe to Linguascope.

In essence, Linguascope.com offers interactive language learning activities for primary and secondary schools (ages 6 to 16). The languages covered are French, English, Spanish, German, Italian and Russian – with Arabic and Chinese currently being developed. Organised in topic areas, the materials are presented via a host of immersive multimedia activities. The site covers all topics normally encountered when teaching languages, including English as a second language. Each topic area contains a series of interactive activities accompanied by printable worksheets that can be used to consolidate the lesson or as homework.

Accessible online with the whole class using an interactive whiteboard, Linguascope can also be used in a group using a computer or individually at home. Truly flexible, the interactive activities are also tablet-friendly, with free iPad and Android apps that students can install on their mobile devices when their school subscribe to Linguascope.

Special offer

The website includes tools that students and teachers alike can use to create their own interactive games, comic strips and even send e-cards. In the Media section they can also watch live TV in the targeted language. Additionally Linguascope provides teachers with a separate portal where they can create their own resources as well as access a range of ready-made content. In the Resource Sharing Area, they can search language specific resources by topic, upload and share their own material. Teachers will also find a range of free downloadable e-books and an image bank with thousands of professional illustrations available to download.

Schools gain access to the website through an annual subscription. The subscription price is extremely competitive, making Linguascope an affordable resource for all types of schools. In addition, readers of Technology & Innovation magazine can claim an exclusive £60 discount on a new subscription with promo code 'TP60' until the end of March 2016 – so there has never been a better time to join Linguascope !

More information and a free preview section can be found at www.linguascope.com.

Join us to help unwrap the next generation of **interactive touch screens.**

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Welcome...

...to this special edition of Technology & Innovation magazine, inspired by – and focused on – the Bett Show 2016.

I don't know about you, but this will be my fifth year of attending the event, and it's not just the venue that has changed since 2012. That was the year, of course, when Michael Gove announced the withdrawal of the National Curriculum Programme of Study for ICT, with almost immediate effect, because "Government must not wade in from the centre to prescribe to schools exactly what they should be doing and how they should be doing it." (You can read the whole speech at ow.ly/VP4Ys by the way – it's strangely fascinating with the benefit of hindsight.)

Half a decade later, and we are looking at first teaching of the new computer science GSCE courses from September, with 'ICT' consigned to the same lexical waste disposal unit as 'preferred learning styles' and 'Baker days'. Despite somewhat hysterical media reporting of research from the OECD on the impact of education technology on exam results, and Ofsted's more recent warning about "extremely disruptive" tablets in classrooms, few disagree that, properly integrated, internet-enabled mobile devices can hugely enhance teaching and learning; and schools all over the country are continuing to explore and discover creative ways to deliver the curriculum for young people who have grown up in a world where it's perfectly normal to carry the sum of all human knowledge in your hip pocket and casually access it with a swipe of your fingers.

Bett isn't about being "dazzled" (as Tom Bennett might put it) by fancy gadgets and impressive software; yes, there will be plenty of exciting products and resources to investigate – but the companies who have developed them want to chat with you about pedagogy as much as price points. And in terms of quality and diversity, the programme of talks, workshops and seminars is, frankly, second to none.

For this issue of T&I, then, we've spoken to some of the most interesting exhibitors about the stories behind their innovations, and asked a selection of speakers for a taster of their sessions. I hope you find something to whet your appetite!

Helen Mulley, editor
@Teachsecondary

find out more on p. 68

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CONTENTS

VISIONARY PRODUCTS

Loxit design and manufacture a comprehensive range of mounts, management and security products for the integration of new technologies.

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BETT STAND NUMBER C258

Q&A
ICT/AV management

Loxit

John Whittle, director at Loxit, is looking forward to a new launch at Bett 2016...

VISIT: WWW.LOXIT.COM CALL: 01625 856 801 EMAIL: SALES@LOXIT.COM

T&I: What is Loxit's specialist area of expertise?
JW We're a UK based design and manufacturer, producing solutions for mounting, security and management of technology within any learning environment. We design for the real world, providing quality, durable solutions built to last in demanding environments.

We make 'smart' products that are universal, allowing the technology to be upgraded in the future without the need to replace the unit. We pride ourselves on ease of use and simple set-up. Our products fall into six groups: screen mounts and lifts; iPad/tablet management (sync & charge, with security); laptop charging trolleys and cabinets; whiteboard mounts and lifts; projector mounts; and security, Apple, PC and Server Security.

Our aim is to ensure that the technology enhances the learning experience. Our products are easy to use, providing the right mix of technology to support the teaching requirements. So you spend more time delivering to your students, and less time setting up, knowing your devices and equipment are ready for use every time.

Why have you chosen to launch your new range of LEC/LCD mounts at BETT 2016?
We have been exhibiting at BETT for the past 16 years so we know it is a great place to introduce new products. Technology and the way it is used in education constantly evolves and we always get important feedback first hand from both end users and integrators.

What's special about the range, and why is it so suitable for schools?
The Hi-Lo Mono is an evolution of our Hi-Lo 500 range launched in 2004. We have redesigned the lift and mounting specifications to reflect current screen and user requirements, whilst using all our experience to improve usability.

So the Hi-Lo Mono has increased lifting capacity; we're now able to offer up to 130kg – this accommodates screens from 40" to the largest screens including 84". We felt it equally important to maintain the simplicity of the original, working with clean lines and a single column, so the Hi-Lo Mono looks as good from the back as it does from the front. This means the freestanding option looks just as smart when positioned in an open space as it does tight onto a wall... and the base can be permanently fixed to the floor if required.

We're really pleased to have two travel options available at launch, 500mm and 600mm, both fully electric. The 600mm option will lift the bottom of the largest screens higher than the 600mm travel when presenting in a large space, so even the pupils right at the back can see the whole screen.

We now include integrated power and cable management as standard. So the whole unit is powered by just 1 mains cable. This comes complete with 4 spare plug sockets and 2 spare IEC outlets that accommodate any peripherals - sound bar, laptop or PC, Apple TV, media player and more. With safety in mind, the cabling and power supply are all kept neat, tidy behind a metal cover plate, keeping wandering fingers out of harms way.

We use universal mount brackets, compatible with the largest VESA patterns, so you can swap screens easily at any time in the future.

Can schools be confident about safety?
We take safety very seriously. We have a proud heritage, designing and manufacturing educational solutions for almost 20 years. All our products are fully CE certified, so they meet the most stringent mechanical and electrical tests. Many of our products have additional safety options for use in SEN and younger years environments, where touches such as rubber bumpers for the edges of bases and electrical pressure switches, which isolate the power supply quickly all come into their own.

How proud are you of the customer support your company is able to offer?
Very! We have a dedicated team of experienced, trained support staff, whose average length of service is over eight years, so they really know the products and understand what customers need. For example, they will check your products for compatibility before they are dispatched and help co-ordinate the delivery. I'm proud of the team and know that everyone is technically very knowledgeable, making them more than capable of hand holding if required.

What else are you looking forward to talking about with visitors to your stand?
We're very exited about a number of other new products. First, our new range of height adjustable desks, designed specifically for education. Height adjustable desking and the health benefits of working at the correct height are things that we are passionate about.

We also have a new electric height adjustable table-top screen mount this is ideal for nurseries and younger years. Finally, our new iPad/tablet sync, charge and management solutions provide excellent value for money, offering the high levels of security not normally seen in this sector.

“The internet should be a subject in its own right”

Thanks to technology, young people have the sum of human knowledge at their fingertips, says **Professor Sugata Mitra** – surely it is the role of schools to develop the skills they’ll need to use it?

Professor Sugata Mitra is a long-term educationist and a scientist of international renown, with over 25 inventions and first-time applications in the areas of cognitive science, information science and education technology to his credit. Professor Mitra has been the chief scientist at NIIT and is currently professor of educational technology at Newcastle University, UK. He is a winner of the Man of Peace Award from the Together for Peace Foundation, USA, and the Social Innovation Award from the Institute of Social Inventions, UK; he was also given the Dewang Mehta Award by the Government of India in recognition for his work related to Hole-in-the-Wall. T&I spoke to Professor Mitra ahead of his session at Bett 2016...

T&I What will you be talking about at Bett?

SM Students freely accessing the internet in school is still considered not quite right but this ignores the fact that using it as a research tool is, in fact, a vital skill that we all need. As adults, we use the internet every single day and it's with practice that we become more discerning in our use, figuring out which websites are trustworthy sources of information, how to keep ourselves safe online and what best to use it for. Although general usage can be self-taught, I believe we should make sure we give children the skills and knowledge to get all they can from the internet.

With other subjects such as maths and science, we know that students won't necessarily be using the information we give them on a daily basis, but this isn't the case with the internet; we use it every single day. So this gives us a gap in the curriculum, and what we're suggesting in our session at Bett is that the internet should be introduced as a subject in its own right. It would be different from other subjects, purely because it changes so quickly that it can't really be taught in the traditional sense. It's a bit of a catch-22, in fact, in that the only way the internet as a subject can be introduced in schools is if children are allowed to use the internet to learn about it.

Introducing the internet as a subject would automatically create immediate changes within a school system. But why can't those methods also be applied to everything else in school? Which is of course the basis of a lot of my work; children can use the internet in groups to work things out for themselves, so shouldn't it be a method that schools adopt?

Lastly, we will be looking at the role of the traditional exam. Many adults seem to agree that if we were taking GCSEs at this stage in our lives, we would all fail. So in what way was that examination useful? And if it wasn't, then what should a new exam look like?

Have we come a long way in integrating the internet into the classroom or are there still concerns around the security of children using the internet?

The change I've seen is that a lot more people are aware of these arguments, but I think we are very uncomfortable when it comes to using the internet in the classroom and this discomfort comes from the perceived dangers. If you take the average chemistry lab in a school, it's a pretty dangerous space but we understand this and we teach students how to stay safe. So I don't see why you can't have something like an 'internet lab', where students would learn how to use the internet in its most efficient (and safest) way.

What would you say has been your most memorable teaching moment?

An English teacher that we had when I was growing up had a way of reciting Shakespeare. I must have been about 13 or 14 years old at the time and we couldn't understand a word of what was printed on the pages, but the way the teacher recited it helped us to comprehend it. He effectively highlighted that it wasn't about what Shakespeare was saying and the specific words that we needed to worry about, but how he was saying it. It helped communicate the message more effectively and meant we could engage. It opened something up that previously felt closed to us, and that's the most important part of a teacher's job.

What are your thoughts on the key ed-tech trends are at the Bett show and throughout 2016?

Tablets and solutions seem to be very prevalent at the moment but my main interest is the parts of technology that carry on evolving without a new version having to be released. The growing sum of human knowledge is accessible to us once we have the tools to navigate the web.

"DON'T MISS THIS!
SUGATA MITRA

Keynote address: connecting global educators and learner – Professor Sugata Mitra

Bett Arena, 10.20,
Wednesday 20 January

The RIGHT STUFF

What's the real key to innovative practice through technology? Attitude, says **Rachel Jones**...

I think many people assume that innovative practice is always about the latest technology, but I'm hoping to highlight that innovation can be about choosing what's going to help the children learn best, not just using technology for the sake of it. It's more an attitude than anything else.

My interest in technology in the classroom started about four or five years ago. I worked in sixth form and the students all had smart phones but didn't use them in class because of the potential to disrupt. That seemed like a waste to me; to have that computational power in their hands and then say they couldn't use it just felt like we were missing a trick. It essentially started as an early BYOD project and there was a steep learning curve. With so many different devices you have to be careful that what you choose works on all of them – but ultimately, we were able to see that the impact on results and retention was noticeable.

The success of that project kick-started my interest in technology, and then I joined my current school as e-learning coordinator. In fact, I believe it's an artificial divide between e-learning and non-e-learning; the role that technology plays shouldn't be limited to certain subjects, nor should it be the mainstay of everything. It's about appropriate use and finding the right tools to make education engaging for the students, and life easier for the teachers.

Clever choices

Deciding which technologies are worth it tends to come right down to cost versus value. As the students have to download their own apps, a lot of what we use tends to be free. There's an app called Poplet that allows collaborative working, a free app called Quiver that you can use to make something 3D, and augmented reality that can be really fantastic for the students. We've had a play with Google Cardboard and that's been brilliant. My favourite innovative things aren't always the latest technology, in fact they rarely are. Aurasma is an app that we've used across lots of different subjects and it has been really well received by teachers and students. It lets us embed 3D video content and can make things interactive and fun. Biology teachers have made their text books into augmented reality with this app, so that when the students hold their iPads over a picture of the heart it takes them to a video of the teachers explaining how the heart works.

Some of the apps are quite standard but the principle behind them all is that a gamification of learning is powerful for students. Competing with each other can spur them on and even just using things like Google Drive so that students can write collaboratively and get peer feedback is really useful. It teaches them not just to value the grade but the actual process, which is one of the best lessons in preparing them for work.

With older students, we also use Periscope to live broadcast things we're doing on to social media. This lets us start discussions online and students follow a hashtag so they can chat to people in the wider world, which is great for getting them access to experts so they can see the real-world applications of what they're studying in school.

Building independence

Some students have an affinity with technology but I think the myth of the digital native is fairly debunked now. A lot of second years are good at Instagram but still need direction with some of the core apps that we use for learning. We notice that some primary school pupils are taught that the internet is a scary place and to steer well clear, to the point where they don't see the opportunities for learning. We tend to start off by training them to see the learning possibilities and to navigate it safely. These skills are everyone's responsibility; all teachers need to show students how to search for things safely and this is also where the digital leaders really come in; it's much more powerful for the students if it's all peer led.

The apps and the iPads can certainly increase students' appetite for learning as well as their engagement, but I often think that's quite a woolly claim; it's about academic applications that are quite fundamental to their future lives, and about them having access to their learning all the time so they can interact with the resources long after they've finished the lesson. That way, we're empowering them to be independent. Students aren't just an empty vessel to fill up, we need to spark their curiosity and it's that which really builds a fire in them. We've found that if they've got the power to learn not just in the classroom but whenever they want then they'll learn more and take more ownership. It can be a bit of a revelation for some of our learners. They like finding out that knowledge isn't just spoon-fed, and for us it's about teaching them how to research, how to collaborate and how to redraft and edit their own work.

There aren't many jobs or degrees that won't require technology, or not require the thinking skills that students gain. If we don't equip them now then we're short-changing them; It's not just about passing exams, it's about the kind of people they become as grown ups. If a student has ten A* grades but doesn't know how to research online, or keep themselves and their personal details safe, then they're at a huge disadvantage. It's a priority for us to make sure that doesn't happen.

"All teachers need to show students how to search for things safely and this is also where the digital leaders really come in..."

DON'T MISS THIS!

RACHEL JONES

Ten ideas to innovate your practice that actually work

Rachel Jones, e-Learning coordinator at King Edward VI School.

Learn Live: Secondary theatre, 12 noon, Saturday 23rd

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BETT STAND NUMBER F100

Q&A
Document solutions

Kyocera

Nigel Allen, marketing director at KYOCERA Document Solutions UK, can't wait to start some conversations at Bett 2016...

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T&I: Do you think most schools currently pay enough attention to document management?
NA: Working closely with schools and colleges across the country, we know first-hand that many are taking full advantage of managed print services (MPS) and document management to better understand their print requirements 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%.

In addition to basic benefits, such as controlling access to devices and assigning costs to departments, MPS allow schools and colleges to tailor their document management environment to suit their needs. Apps are increasing in significance and we're seeing more demand for our range of HyPAS apps for the education sector. These include Teaching Assistant, which automatically marks student papers on the device, ensures accurate test reporting and allows teachers more time to focus on their students.

Document management can also help out when it comes to managing the school information management system. With a multifunctional device, schools can scan hard copy student records directly into the SIMS.net database for centralised storage and simple retrieval.

Document management in education is crucial to support learning and help the organisation to keep costs low and efficiency high. While many organisations are taking advantage of it, we feel there are still plenty of schools and colleges out there that don't fully realise the benefits it will bring to their organisation.

How could Kyocera help schools work more efficiently, and save money?
We have served the UK's education sector for the last 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.

Our solutions for the education sector include Equitrac, PaperCut, KYOCERA Mobile Print App, SafeCom and Autostore. In addition, we have created SIMS Connector, BioStore and a range of HyPAS apps specifically for the education sector, including Teaching Assistant.

Each of our solutions has been tailored to the education sector's specific needs and aims to help make teachers' lives easier, improving efficiency across the organisation while making cost savings.

Are your solutions eco-conscious?
We launched our first ECOSYS printer back in 1992 – the year of the first Earth Summit in Rio - and have been refining and improving the environmental performance of our products ever since.

Our unique ECOSYS technology adopts a radical cartridge-free engine design that drastically reduces 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 thanks to the low-waste design of ECOSYS technology. We are still the only manufacturer to have taken this approach, combining maximum resource efficiency with maximum user economy.

Our long-life design concept utilises various ECOSYS technologies, including a-Si (amorphous silicon) drums, so only the toner needs to be regularly replaced. As a result, as many as 500,000 pages can be printed without having to replace anything except toner, significantly reducing both waste and cost.

What do you offer to customers by way of after-sales support?
We provide a wide range of support options so that customers can choose the service level that best suits the needs of their business.

When it comes to our devices, you can sleep safe in the knowledge that we offer a drum and developer guarantee. Wherever you buy your KYOCERA printer or MFP, its long-life drum and developer are covered by a unique manufacturers' guarantee that it will be free from defects for its entire design life in pages or for three years from date of purchase, whichever is reached first.

Why should visitors make sure they come to your stand at Bett 2016?
We'll be showcasing the latest additions to our education family of products as well as demonstrating our HyPAS apps in action.

HyPAS apps can be selected off-the-shelf or custom built to fit your individual needs. These apps seamlessly fit into your workflows and improve efficiency and user experience, from Teaching Assistant which automatically marks papers, to Mobile Print which enables easy printing from mobiles and tablets.

We will also be exhibiting PaperCut 15.3 with integrated scanning, which is a print management solution that helps you save money and reduce printer waste by tracking all activity, allocating costs to departments and giving you a central view of your printer fleet.

Q&A

Green Schools Online

Andy Williams introduces a first class solution for your school website...

VISIT: WWW.GREENSCHOOLSONLINE.CO.UK CALL: 0800 955 3999
EMAIL: HELLO@GREENSCHOOLSONLINE.CO.UK

T&I: How important is it that schools have a great website?
AW It may be a cliche, but first impressions really do count. The school website is often the first contact people will have with the school. Whether it's a prospective parent, new staff member or an Ofsted inspector, it's important to ensure you make the right first impression. And let's not forget day to day visitors such as current parents who will appreciate quick and easy access to up to date information. We know that more than half of parents use their smartphones to access the school website so having a mobile-friendly website is important too.

Why are you the right choice for school website solutions?
When we started working with schools in 2007 they told us that either they didn't like how their website looked or they found it hard to update. We decided we wanted to create great looking websites which are easy to manage at an affordable price. We still do, and now work with over 900 schools across the UK. Focusing exclusively on school websites allows us to offer both insight and value for money.

What do you offer by way of ongoing support?
As well as providing training when a new website goes live, we offer unlimited support by telephone and email. Quite simply, if you get stuck with something we'd rather you get in touch than struggle alone as we know we'll quickly be able to help you out. We pride ourselves on offering great support – it's one of the reasons why we're still working with schools that joined us in 2007.

How can schools find out more about working with you?
We're happy to chat to schools without obligation about their websites. In line with our open and honest values we also have a comprehensive website and publish all our prices online. No hidden fees, no pushy sales patter – just friendly staff who are all school website experts.

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Q&A

Interactive Education Solutions

BETT STAND NUMBER: B150

Mandy Kaur, Director, explains what Interactive Education Solutions could offer your school...

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interactive education solutions

T&I: Why should schools come and speak to you about IT solutions?
MK We are passionate about providing schools with the right technology for their classrooms individual needs. We understand that every classroom is unique and that every student learns in their own individual way, that is why all our software and hardware is designed to apply concepts such as gamification, BYOD and personalised learning to give students the ability to learn at their own pace and in a format they can relate to the world around them.

What kinds of products are you able to supply?
Gamification and BYOD are becoming increasingly important in our classrooms. It is imperative and absolutely essential that teaching aids, including technology within a teaching and learning environment, enhances engagement, motivation and supports these classroom initiatives. As a result, we help many schools, academies, colleges and universities with the latest LED touch screens, visualisers, tablets, digital signage, projectors, and a plethora of education software to be used from pre-school, through to KS1-KS4 and beyond.

Do you also offer training and after-sales support?
We are strong believers in Continuing Professional Development (CPD) and Continuing Professional Education (CPE) to ensure all staff members strengthen their knowledge and skills to adopt new technology within their lessons. Full training is available, either online or on-site.
We have also introduced a 6-week nurture programme for all customers. This allows for everyone to have a dedicated service with the Customer Service Manager to ensure every school is getting the best out of their investment.

Give teachers a reason to make sure they visit your stand!
Our stand at Bett is the place to experience the latest classroom technology. On that note, we also have a big announcement to make live at Bett, we can't wait to tell you... but what we can say is that we will be giving away a 47" touchscreen every day and we look forward to demonstrating new ways to connect your students and enhance learning in your classroom.

Innovation, creation, and LEGO® EDUCATION

Whatever your plans for Bett 2016, make sure they include a visit to the stand that's at the heart of the whole event...

In a fast-moving world of education technology, there is a great deal on offer for teachers looking for tools to improve teaching and learning. So much so, in fact, that sometimes this can prove overwhelming for teachers visiting Bett, the world's leading education technology event. In this landscape, LEGO® Education is offering something both reassuringly familiar, yet constructively responsive to change. Here, Andy Snape, LEGO® Education Academy Certified Trainer, specialising in secondary education, and assistant head of faculty at Newcastle-under-Lyme College, explains why he will be on hand at Bett to show how the trusty LEGO® brick has evolved to become one of the most innovative and engaging educational tools in the classroom...

At the heart of Bett this year will be the all new LEGO Education stand – but not as you know it. For the first time, LEGO Education will be introducing its Innovation Studios into the arena, which will host a series of hands-on workshops run by teachers to show exactly how LEGO Education is used in your classroom to teach computing and STEM subjects.

Inside the LEGO® Education Innovation Studio

Tomorrow's scientists and engineers are waiting to be encouraged, inspired and activated. With a dedicated LEGO Education Innovation Studio, schools can lift a wide range of subjects, such as science and maths, from the pages of a textbook and bring them to life.

LEGO Education Innovation Studios have been designed with the intention of providing a dedicated space to generations of learners and give them the opportunity to tap into their creativity to better improve their educational understanding through hands-on learning. There are already over 50 of them across the UK. LEGO Education has taken the LEGO brick further than ever before, transforming it into a tool which enables teachers to illustrate complex concepts such as coding and combining it with curriculum relevant content which makes it simple to teach and learn.

Where better to show this in practice, than at Bett? LEGO Education is bringing the Innovation Studio to the show, along with their certified trainers such as myself and other school teachers who have been using the resource to show just what impact LEGO Education resources can have on the classroom.

What's in store at Bett 2016? This year at Bett we've got more going on at our stand than ever before, to ensure that teachers will be able to see the real working value of LEGO Education within the classroom.

From within the LEGO Education Innovation Studio, we will be offering you the opportunity to participate in free computing and science primary and secondary teacher-led workshops, each with different areas of expertise and backgrounds.

In these seminars, you will be able to learn about their experience of using LEGO Education resources in today's classrooms, as well as discover how using the familiar LEGO brick, relevant curriculum material and digital tools means you can really engage pupils and deliver computing and science lessons at both primary and secondary, while developing skills such as collaboration, communication and problem-solving.

The seminars will be available each day of BETT in free, 30 minute hands-on sessions on their stand, E141. Come and see for yourself how LEGO Education resources work in the classroom. I promise you won't

leave disappointed; in our school, the LEGO Education Innovation Studio is used by our sixth form and the rest of the school, other schools in the area and corporate businesses, so it really connects the community as a whole. The LEGO Education resources we use in our studio are applied across various subjects, which means we're really getting the most from it and pupils can get hands-on practice in subjects that wouldn't necessarily be that interactive within the usual classroom environment, for example, sociology. Being able to teach within the studio really enriches the curriculum and also helps the pupils develop skills such as communication and teamwork.

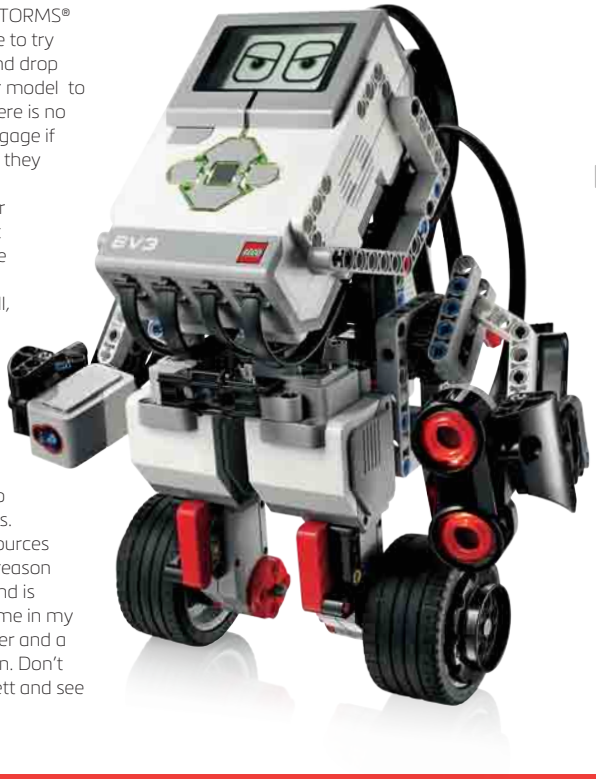
Building educational bridges with the LEGO brick

LEGO® has been a part of children's lives for over 80 years, making the transition into education a natural step forward. You never have difficulty getting pupils excited to learn with LEGO Education; every child, irrespective of ability, feels at ease with a task put in front of them. More than that, though, teachers find the simple step-by-step set up of the lessons easy to manage, making the task of teaching more complex topics such as coding unintimidating – and fun – just as it should be.

By getting hands-on with a task, pupils are able to see the practical applications of the ideas behind it and apply their knowledge to multiple different subjects. As well as using technologies such as iPads to record and create digital content within lessons, teachers can make use of a wide range of resources to meet the requirements of the computing and STEM curricula.

Simplicity is a key principle at LEGO Education, and is something we'll be demonstrating on our stand at Bett. With LEGO® MINDSTORMS® Education EV3 it is simple to try and test out with drag and drop icons programming your model to perform a given task. There is no fear that pupils will disengage if it doesn't work first time; they are determined to make their robot work – not for the teachers' benefit, but because they want to see it come to life. Learning to fail is an important skill, in order to encourage perseverance and to develop problem-solving skills.

If teachers are inspired and excited about their subjects, this will naturally transfer into the engagement of pupils. With the right mix of resources and training, there is no reason why this can't happen, and is something I see all the time in my capacity as both a teacher and a trainer at LEGO Education. Don't believe me? Visit us at Bett and see for yourself!



DON'T MISS THIS!

FREE WORKSHOPS

Andy will be hosting a number of workshops at Bett 2016 on stand E141, showing how computing and STEM subjects can be taught at secondary school.

To sign up for these free workshops, visit: LEGOeducation.co.uk

2016 TECHNOLOGY + INNOVATION AWARDS

in association with LEGO education

IN SEARCH OF EXCELLENCE

Nominations are now open for the Technology & Innovation Awards 2016, in association with LEGO® Education – don't miss your chance to shape the shortlist!

The Technology and Innovation Awards are dedicated to celebrating outstanding practice, significant innovation and exceptional creativity.

For 2016, we will be offering awards in THREE categories: Best Teacher, Best School, and Technological Innovation of the Year; and in order to make sure we really are recognising exceptional achievement, we need your help.

We are asking for nominations in all three categories, from which we will be able to put together the strongest possible shortlist to send to our panel of distinguished judges. So, if you know a teacher (of any subject) who is as passionate about technology as pedagogy, and uses it to ensure that every lesson is engaging, memorable and effective; or a school where technology and innovation are at the heart of the curriculum, where everyone is involved in making sure that the use of technology is purposeful and creative, and where experimentation and risk-taking are an important part of the learning journey, this is your chance to let us know about it.

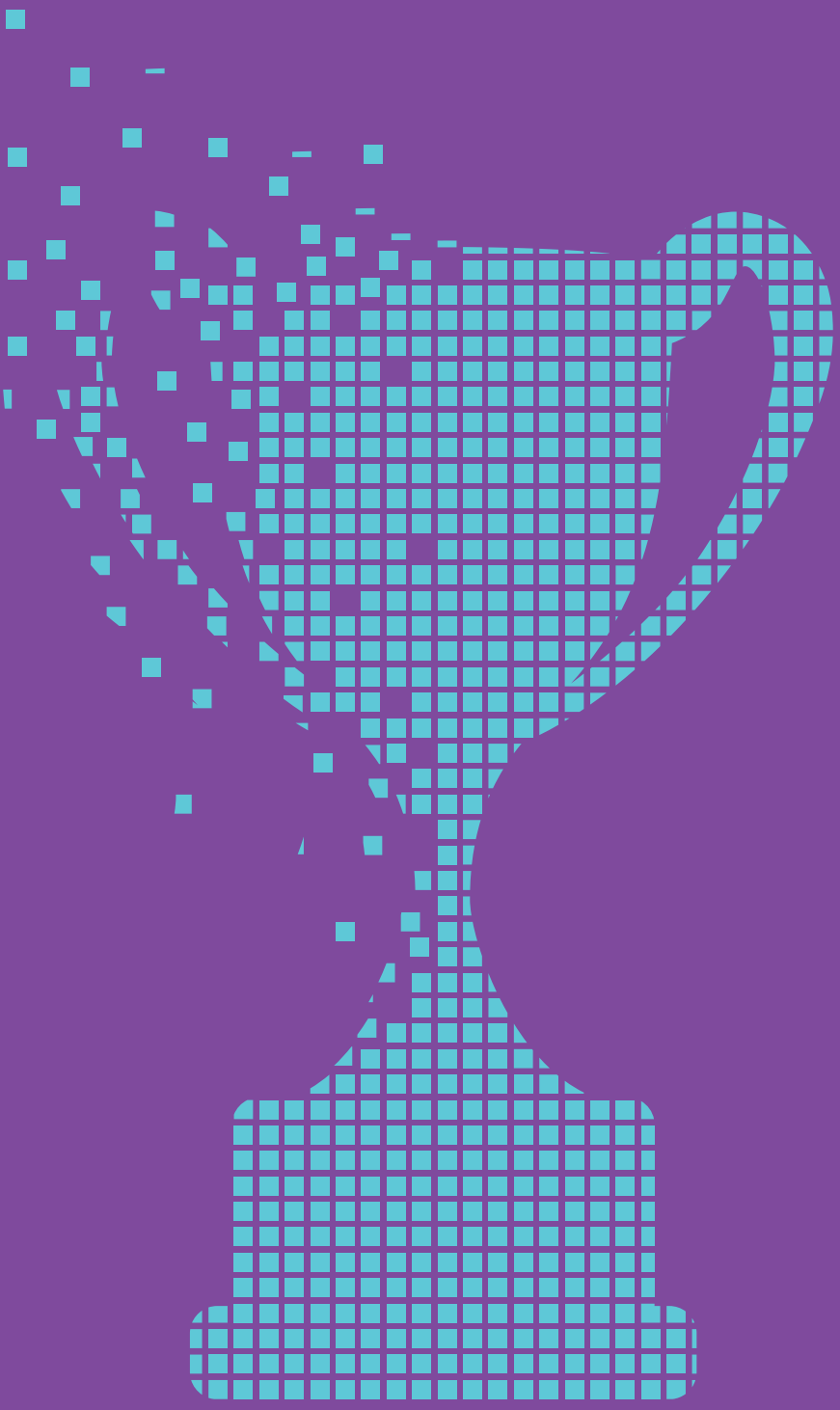
Individual achievement

Last year, the title of Best School was scooped by Clevedon School in North Somerset – one of only a handful of Apple Distinguished Schools in the UK, where students are encouraged to develop and support technology that will be helpful for their peers and teachers, too. "Of course it's important to give pupils the technology that supports their learning," says data and communications manager Jennie Redwood, "but we think they should be able to shape their education and the school environment as much as possible."

"I have long been interested in the development of online resources to support my students in their learning," comments Rob Chambers of St Ivo School, Cambs, who was named Best Teacher in 2015. "It is a privilege to be nominated, let alone win this award."

Classroom selection

Or perhaps you know of a product or resource worthy of the title 'technological innovation of the year' – currently held by Earwig (earwigacademic.com) for its clever, intuitive – and potentially fundraising – educational achievement reporting system? As ever, we are not interested in flashy gimmicks or short-lived fads; we know there are countless companies out there using a deep understanding of what teachers and students really need to develop truly transformational ideas into affordable, lasting technological solutions – and these are the kinds of innovations we want to highlight. Last year's shortlist included everything from touchscreens to an online seating planner... we can't wait to see what brilliant ideas will be suggested for 2016!



"New technologies have a vital role to play in the 21st century classroom."

Rob Chambers, winner, Best Teacher, 2015

NOMINATE NOW!

Nominating a teacher, school, product or resource to be considered for the 2016 Technology and Innovation Awards, in association with LEGO Education, couldn't be simpler – just visit **Teachwire.net/TIAwards2016** and complete the relevant online form. It's your opportunity to shout about all the amazing things that are happening out there; because after all, we can only celebrate excellence if we know about it in the first place...

And if you need another reason to get involved, we are delighted to announce that for 2016, thanks to our association with **LEGO® Education**, we have some fantastic prizes on offer for winners!

The recipient of our Best Teacher award will receive a LEGO® MINDSTORMS® Education EV3 FLL® Starter Set, worth £399.99 including:
- **EV3 Core Set (45544)**
- **Transformer 10V DC (45517)**
- **EV3 Expansion Set (45560)**

For the winner of the Best School award, we are delighted to be able to offer a LEGO® MINDSTORMS® Education EV3 Getting Started Set for 16 pupils, worth £2,549.99 including:
- **8 x EV3 Core Set (45544)**
- **8 x Transformer 10V DC (45517)**

Nominate today at Teachwire.net/TIAwards2016

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BETT STAND NUMBER B108

MIND THE GAP

Multi-award-winning GCSEPod will be back at Bett this year – with exciting new features to announce...

Intuitive, effective, and very simple to implement, GCSEPod taps into the potential of mobile learning through a combination of clever technology and award-winning curricular content.

How does it work?

Unlimited access to 12,000+ hours of curriculum-relevant GCSE learning and revision material delivered in a unique 'Pod' format, combined with teacher tools to monitor student usage, set work and report on impact.

Using it

Each Pod provides three to five minutes of highly targeted accessible learning, mapped by exam topic and board to ensure students can focus on exactly what they need to learn. Students stream them online or watch them offline on ANY mobile or desktop device - wherever or whenever they are ready to learn, GCSEPod is there to help them.

The content

Written by teachers, narrated by professional voice over artists and enhanced with text and images, GCSEPod engages low, middle and the highest achievers to ensure measurable impact on GCSE results across 21 subjects.

"In our first year with GCSEPod, our results increased 5%. Our most frequent GCSEPod user was our highest achiever with 7xA*s!"

Mr D Howkins, Vice Principal, Ormiston Sudbury Academy

GCSEPod is constantly evolving by listening to the needs of its users and implementing changes. The company's commitment to ongoing publishing and development ensures it keeps right up to date with specification changes, the latest technology and today's exacting requirements for impact data – and the team is excited to introduce a brand new piece of functionality, which will be launched at Bett 2016.

"Our 5A*-C EM figure went up by 20% to 73%. GCSEPod was something 'a little bit different' for the students. Results were a massive improvement on last year and I firmly believe GCSEPod played a role."

Andy Quinn, Deputy Headteacher, The FitzWimarc School.

Introducing: GCSEPod's Knowledge Gap Identification (KGi)

This new feature allows you to discover where students are struggling, and automatically sets playlists for them to develop their learning.

It joins assessment, feedback and independent learning into a results-boosting circuit which not only helps students and their teachers identify their knowledge gaps but directs students towards Pods that will strengthen their weaker areas.

The Question Bank

GCSEPod already has an assignments feature that lets you create questions and send detailed feedback to your students. Now this has been made even easier with the creation of a bank of over 14,000 questions written by teaching professionals. Choose the questions you like, edit them to your needs, and create your assignment in seconds.

If you choose to create your own questions, you can opt to share it with your colleagues and the wider GCSEPod community, so others can benefit from your expert knowledge.

Charge Playlists

Each question in the bank is tied to relevant Pods. If a student gets that question wrong (or partially wrong in the case of an essay style question), the system will identify it as a knowledge gap, and use this to generate a Charge Playlist.

Charge Playlists are generated for any assignment you create, including for questions you've written yourself.

Each Charge Playlist is personalised to each student and contains all the Pods they need to watch to fill their knowledge gaps. Your students charge their knowledge, knowing exactly what areas they need to work on.

Quite simply, Knowledge Gap Identification is GCSEPod's way of saving you time and making sure students reach their full potential.

GCSEPod – Loved by students, recommended by teachers.

"It's technology and innovation for education at its best"

Winner, Technological Innovation of the year 14/15 - Technology and Innovation awards

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The CONFIDENCE TRICK

New research shows that while increasing numbers of schools are incorporating technology into every classroom, more training and support is needed for teachers to use it effectively...

Digital learning is an inherent part of the educational system; whether that's schools providing pupils with tablets or laptops, or students bringing their own devices (BYOD) into the learning environment. In fact, technology analyst Gartner values the educational tech market at almost £17.5 billion.

But while the rise of the 'digital classroom' has created new methods of engaging the younger generation – such as the 'flipped classroom', in which students view content or carry out research in advance to discuss collectively in their lesson – there is still a huge gap between how the most technologically advanced schools are educating children, compared to those yet to embrace digital learning.

And, the importance of technology in the classroom goes way beyond education; in October, mobile network O2 predicted that the UK will need 2.287 million digitally skilled workers by 2020 to satisfy the country's potential.

New research by Sahara Presentation Systems Plc, a leading distributor and manufacturer of educational technology, indicates that teachers and lecturers do not have enough training or support when it comes to using and integrating the most prevalent technologies in schools, colleges and universities around the UK.

The study, which polled 500 primary and secondary teachers as well as lecturers working in higher education, identified the devices and software being used to educate Britain and uncovered their impact in the educational setting.

On the move

Given that 90% of 8-14 year olds and half (52%) of 0-10 year olds own a mobile device according to a 2014 Broadband Choices survey, mobile tech seems a logical place to start.

The majority of schools are using tablet technology as part of the classroom experience – with 44% of teachers and lecturers using iPads in class it is the most popular tablet device followed by the Microsoft Surface Tablet. However, almost a quarter (24%) of educators still aren't using any form of tablets during their lessons. For those using tablets and iPads in education, there is an overwhelming feeling that they aren't being properly integrated into the curriculum, with only 5% rating integration of devices as 'excellent'.

Could do better is the general consensus, and therefore education, government and the EdTech community need to give greater thought to how mobile technologies can be more successfully integrated into modern learning.

Another popular tool within the digital classroom is the interactive front-of-class display, with only a quarter of the teachers and lecturers polled claiming not to use them. When asked how well they felt interactive displays were integrated into the curriculum, 19.5 % of the educators we surveyed thought their school or college had done a good job – showing definite room for improvement.

One of the key barriers to intuitive digital education is confidence; 69.2% of the teachers and lecturers surveyed said they had not received adequate training in using personal tablets while 61.7% of

the panel said the same of front-of-class displays; and therefore aren't sure how to use them to best effect. "Part of the issue here is that we are so familiar with these devices in everyday life, which leads many schools to assume that their workforce will automatically know how to apply them in optimal ways; whereas this isn't the case in the educational market," says Shaun Marklew, Sales and Marketing Director for Clevertouch interactive touchscreens.

Content issues

It's not just digital hardware that has grown in popularity in recent years; apps are becoming much more widely used, with 41.1% of British teachers and lecturers currently employing apps to support learning. The Apple Store, Google Play for Education and Amazon are the most popular three sources. Luckily, 70% of those polled trust some apps to have some appropriate content, but their trustworthiness generally lies in whether the content is free to use, making it more likely to contain advertising or in-app purchases, which could prove to be a distraction in class.

Clevertouch has tackled this issues head on by introducing its own app store, which has removed in-app purchases and adverts from its educational range. As a result, commercial app stores may come under increasing pressure to reduce the cost of educational apps and increase the standard of those that are free to use.

Interestingly, 43.5% of teachers and lecturers noticed increased activity within the classroom and 42% saw better engagement of children in a subject when apps were used. However, fewer teachers and lecturers are aware of the time saving benefit that apps can have on their own productivity. Given that ATL figures from April revealed almost 4 in 10 newly qualified teachers will quit before completing a year in the classroom, increasing training that helps teachers to plan and deliver lessons more efficiently, could encourage more to stick with the profession.

Future investment

Of course, training is an added cost associated with building a digital classroom, but the good news is that many schools recognise the need to prioritise digital resources, and the technology gap is closing as a result. Today, just over half (51%) of teachers and lecturers feel their employment is dedicating sufficient budget to digital tools. However, a third (33%) still feel their establishment isn't putting enough resources into educational technology.

Failing to invest in digital learning will not just lead to under-resourced schools falling behind their technology-forward counterparts; it will impact the development of pupils' skills and the career opportunities available to them. There is also an apparent imbalance in the distribution of budget across the educational spectrum. The research identified that Key Stage One is the worst serviced educational level for apps. This is ironic considering these children have grown up alongside application enterprise – overall the results suggest a lack of understanding in the way that apps for this age group can be used to promote learning in the first two years of school

Classroom technology has the power to create a more level playing field, particularly when it comes to students with learning difficulties like dyslexia for example, supporting new teaching pedagogies, or, as recent research by the OECD identified, helping to extend pupils' knowledge beyond what they can access from a book.

In many respects the survey is encouraging, as it shows that technology is breaking new ground in education and that the benefits far outweigh the negatives. However, schools and colleges need to take significant steps to integrate technology into the curriculum. Enhancing the role of technology in education relies on greater investment in training for teaching staff, to make interactivity an intuitive part of the learning experience. By taking steps towards achieving this goal, schools can increase the mental connections and digital skillset of the next generation as they learn, which will better equip them for later life.

> "Increasing training that helps teachers to plan and deliver lessons more efficiently, could encourage more to stick with the profession"

DON'T MISS THIS!

FULL REPORT

The full report can be downloaded from the Sahara website www.saharaplc.com/whitepapers

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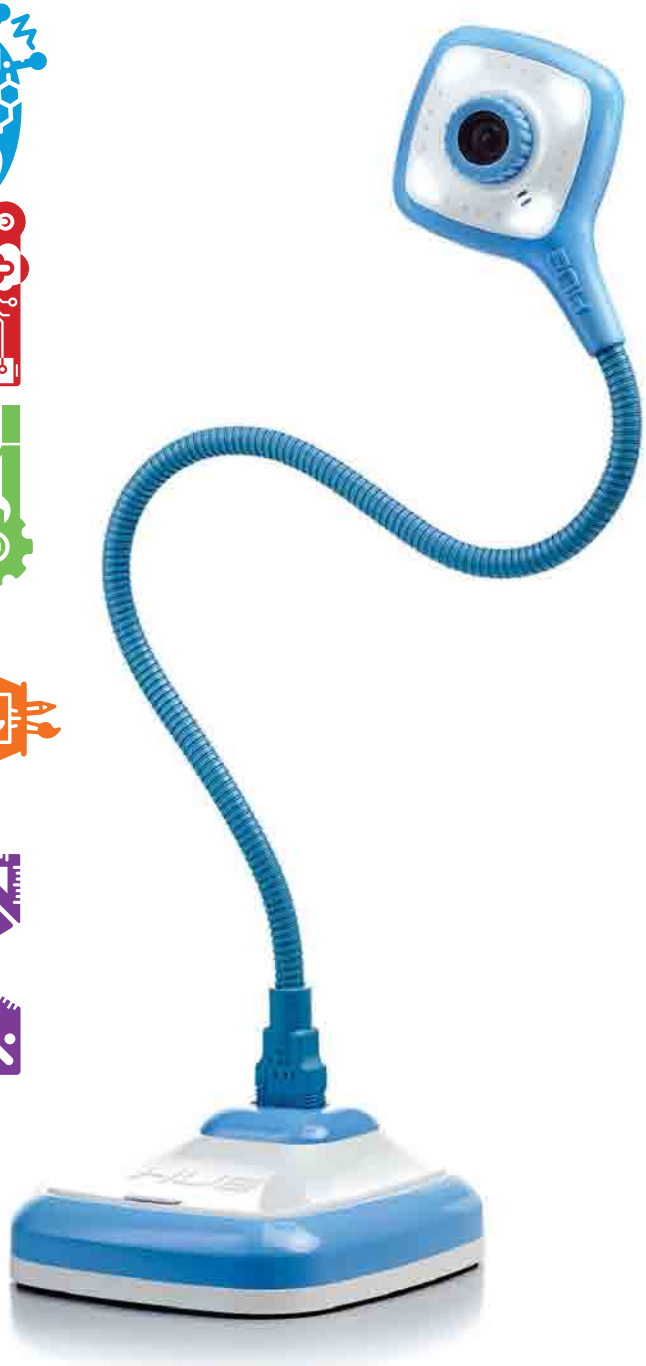

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LEADING THE WAY

At Wigan UTC, staff and students alike are at the cutting edge of technology for education and beyond, as executive principal **Gary Nelson** explains...

Education technology has come a long way in the last 20 years. It's only two decades ago that schools were considered exceptionally advanced to have a computer for each class, and teachers around the country were beginning to marvel at the use of dry wipe markers.

Fast forward to 2016 and technology is an integral part of how we teach, from early years right through to university. More and more, students entering the job market are required to be technically proficient and have developed additional skills that will help differentiate them from other graduates and school leavers.

Although delivering a tech-infused education comes at a cost, the creativity and knowledge teachers can nurture through the effective use of software and equipment cannot be underestimated.

UTCs

The introduction of university technical colleges (UTCs) in 2010 prompted something of a revolution in terms of technology in schools, particularly for students at GCSE and A-level. As with all things in education, collaboration is your best bet when it comes to delivering the skills needed in modern day professions. As a UTC, we naturally have a very strong link with the University of Central Lancashire (UCLan) that sees many of our students go on to study STEM courses at undergraduate level. But we also see a huge benefit in partnering with local industry and software partners in order to develop and maximise our use of technology.

For example, we work extremely closely with Google for Education, to the point where we've been named one of its flagship schools. While integrating their software has proved a great way for our students to develop their knowledge of Google-based programmes, it serves a greater purpose as a facilitator of teaching.

Much of ur students' work is project based, so it's imperative that we enable group working. Google's Classroom application means that students can all edit and review the same documents at the same time – so a single project can quickly become an interactive and classroom wide endeavour. In order for this approach to be successful though, we have to develop our staff's understanding of the technology. To that end, we deliver regular training in partnership with Google and put systems in place to encourage staff to be using the software for their own needs, not just the students'. If you don't have buy in and enthusiasm from teachers then you would be better advised to return to using the chalkboard and eraser.

Industry skills

While we utilise software as a facilitator for work in the classroom, there's also a huge amount of industry level practical technology with which students can develop their skills – and partners are more than willing to help. While our remit as a UTC encourages it, I cannot recommend enough

that schools engage with local businesses to see how they can mutually support one another. A great example of this would be our reltionships with employment partners such as Siemens and Murrelektronik. Both businesses recognise that we can help develop the skills their future employees will need and, as such, have supported us with the delivery of state-of-the-art laboratories where we are able to cultivate those industry-specific skills. Similar partnerships have also enabled us to install engineering workshops, an industry standard CAD suite and a pilot scale manufacturing facility.

Although not every partnership will garner that level of investment, it's a fantastic way to explore how you can use new technology and also ensure you are fostering the most appropriate skills. There's also the added benefit of creating employment, work experience and apprenticeship routes for students during and beyond their time with your school.

Breaking away from collaboration briefly, there are opportunities out there to develop your own niche using technology. As a college, we're extremely pleased to have the accolade of being the first educational establishment in the UK to operate a vertical farm. Designed as a modern alternative to rural crop production, vertical farms are essentially skyscraper greenhouses, intended for growing crops in urban environments. While we may not see clusters of leafy tower blocks springing up for a few decades yet, our vertical farm has allowed us to deliver an entirely new course for our students whilst maximising the space we have available to us.

Share and share alike

We're also able to bring the benefits of these facilities to students in the surrounding area. Schools might be competitive in terms of recruiting students but it shouldn't cause them to close their doors to one another. Wigan UTC is very fortunate to be a part of Bright Futures Educational Trust, a collaborative network of nine schools across the North West, and we try and share our leadership in educational technology with other member schools.

While something like an electronics laboratory might not be available in every school, there's no reason why students shouldn't have the opportunity to experience one at some point. Moreover, schools should aim not only to share their facilities but also their practices with others. If you're using a technology that works, let others know about it and encourage them to do the same – you'll find that giving support will make its way back to you in other practices.

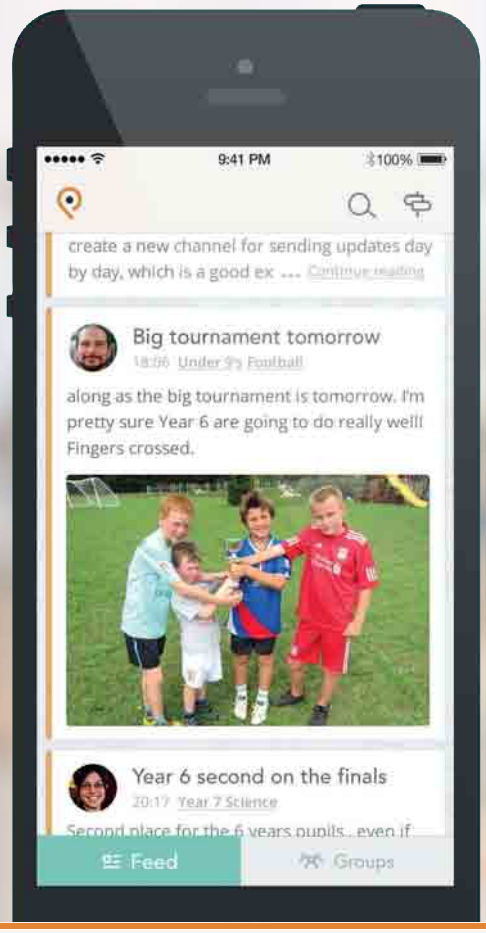
We work best when we work together – as students, as teachers and as schools. Technology is the ultimate enabler of collaboration in and out of the classroom and will continue to be so for the foreseeable future. So while technology in 20 years might be unrecognisable from what we use today, you can guarantee its ultimate purpose will remain the same.

ABOUT THE AUTHOR

Gary Nelson is executive principal at Wigan UTC (wiganutc.org)

parenthub

If you could create a channel...



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SOMETHING SPECIAL

SEN expert Sal McKeown takes us through her selection of must-visit stands for Bett 2016...

Mark my words BETT 2016 will be full of hype, drowning in adjectives and nearly every product will claim to be 'innovative' even if the company has been doing the same thing for 20 years. As a quick fix, I offer you a personal and totally biased account of things you might find useful for young people who need extra support.

Let's start with exams, since this is what counts with politicians and parents alike. There are young people in your school who have poor reading skills. Under JCQ regulations many used to qualify for a reader, which was expensive for schools as they had to provide an extra invigilator as well. Now there are ICT solutions. TextHelp (C141) and Scanning Pens (A200) have refined their products for BETT 2016 and ClaroRead (H410) is an increasingly popular choice. Students at Hereford Sixth Form College are using it. "Their faces light up when they see what it can do," says learning support assessor Shaneagh Moriarty. "They can get it to speak text quickly, slowly or repeat things and are enjoying being more in control of the exam process."

The burden of admin is stressful and the recent SEND reforms need will not improve matters but The Publishing Foundry (F75) has come up with a solution. Shortlisted for the BETT ICT Special Needs Solutions, Educater [sic] integrates with all the main Management Information Systems and should save Sencos time, while its Pupil Passport lets teachers gather and reflect the young person's views for Education Health and Care Plans (EHCPs). Couple it with another shortlisted solution to help learners who struggle to create text. Crick Software's SuperKeys (D240) is an app that enables students with a physical disability, dyspraxia or poor vision to use an iPad or iPhone. It gives you just seven large keys to target instead of more than 30 small ones - a truly clever access device for just £9.99.

Some schools are streamlining parent contact with WisePay (A120) Parent Evening Booking Service. This lets schools create timetables for appointments and link them to contact information so if a teacher needs to cancel, the system will send an email or text to parents and they can check the system on their phone or tablet to find a free slot and book it.

Rewarding experiences

Behaviour is a major issue for schools but two products offer incentives for students. Teachers2Parents (E368) has BehaviourWatch that tracks behaviours and lets staff edit and analyse information easily. This may help them to pinpoint triggers for bad behaviour. Every time a student is issued with a reward the system will add points which can then trigger certificates and texts to the parents. With Epraise's school rewards system (D352), points make prizes. Teachers allocate points online which makes it quick and easy and there is a shop where pupils can spend their points while the system records achievements, milestones, certificates and leader boards

If you want to build concentration and specific skills try MyCognition (SN5). It makes bold claims: '200 years of neuropsychiatric research in a self-administered 15-minute assessment'. It uses a games approach to create personalised brain training programmes and is used by over 2,000 learners. Roy English Deputy Head Abingdon House School is a fan. "Children are not good at persevering when the going gets tough," he comments. "MyCognition overcomes this difficulty. In

school I have seen children working away with intense concentration, often choosing to use the programme in their own free time or choosing to use it when at home."

Engagement is essential for improving student performance. Pobble (BFG4) offers a global audience for young writers. It is being used as part of an initiative called Literacy Through Sport with Pobble writing days at Middlesbrough Football Club, St. James Park, Headingly and Hotel Football next to Old Trafford.

Plan to succeed

Phoenix High School had the most improved GCSE results in Hammersmith and Fulham in 2014. They have been using ReadingWise (E60) an online intervention that jump-starts reading for the 20% who struggle. "Initially we were quite worried that we would have to babysit the students and talk them through it, but we were incredibly impressed by how quickly they adapted," enthuses teacher Pauline Tobierre. One of the best features of ReadingWise is that it teaches strategies that work away from the computer such as visualising words in different colours and writing them in the air.

3P Learning (C80) is famous for Mathletics which uses a 'gaming style' challenge and reward system. They are launching IntoScience for KS3-4. This has been shortlisted for a BETT award in the Secondary Digital Content category. It offers an immersive 3D environment and encourages an enquiring mind. It is exciting to have examples of learning by doing: discovering the difference between weight and mass by experiencing playing basketball on the moon but I am a bit dubious about crashing a car to learn about friction. I hope that one remains a virtual experience.

Clearly, there's a lot on offer - if you are going to Bett, plan ahead to make the most of your time; touring the hall looking for freebies is all very well, but you are cheating yourself if you don't target stands of special interest and take in some seminars, too.

Nasen will host the SEN Information Point and is running the seminars in the Learn Live SEN Theatre. Secondary teachers should check out these three:

Wednesday 4.30 -5 John Galloway, Advisory Teacher for ICT/SEN and Inclusion and Catherine Elliott from the Sheffield City Learning Centre will be talking about P levels for Computing for young people working below national curriculum levels.

Thursday 21 January 3.00 -3.30 Gregory Chiswell, Deputy Head teacher of The Observatory School Merseyside will be talking about the 'Wettest Classroom on Earth' – a 40ft Racing Yacht. It offers ideas for STEM and for raising the achievement of pupils across the school.

Friday 22 January 10.30 – 11.00 and it is the turn of the arts with Fil McIntyre, from Beaumont College Students with highly complex needs have been building their film making skills using Drones (or Quadcopters) to capture video from different perspectives.

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supporting exam accessibility and inclusion within the classroom with **read&write**

Changes to JCQ exam access arrangements mean that computer readers can now be used in exams, even where reading is being assessed, opening up a world of opportunity for struggling readers and writers to be assessed on a level playing field.

Read&Write, Texthelp's text-to-speech literacy software, is being employed by many secondary schools not only in the classroom, but also as a computer reader to make examinations accessible. The software allows students to read all of the English Reading paper independently (including sections where reading is being assessed) and can also be used in a wide range of other exam subjects.

Results in action

RSA Academy Arrow Vale have seen some great results since introducing Read&Write:

Louisa Smith, Special Educational Needs (SEN) teacher at Arrow Vale comments: "Used as a reader in exams, Read&Write has made a huge difference to exam grades, particularly in the English language exam where human readers are not allowed. It has allowed pupils more independence, making them more confident, allowing them to work at their own pace. One student refers to it as her 'best friend'."

Benefits of Read&Write for schools:

- enables student independence across the school
- saves staff time and school funds (by reducing the requirement for human readers)
- improves students' grades

Read&Write works as a flexible toolbar and changes students' lives through lots of clever reading, writing and study support features.

These tools help students who struggle with reading and writing reach their potential when working in class, doing their assignments/coursework and in exams.

visit texthelp.com/bett16 email bett@texthelp.com texthelp™

BETT STAND NUMBER C141

Q&A
Assistive technology

Read&Write

Edtech that can help every student reach his or her potential is out there – and Mark McCusker, Texthelp CEO, wants schools to make the most of it...

VISIT: TEXTHELP.COM/BETT16 CALL: 028 9442 8105 EMAIL: BETT@TEXTHELP.COM

T&I: Do you think all schools are fully aware of the edtech options that are available to support students taking exams?
MMcC: This is two questions within a question. If you ask are teachers aware of their students' entitlement to use assistive technology during exams, I would say increasingly yes. However, when it comes to the detail of where responsibility lies as well as the practicalities of delivering the AT, there is considerable confusion. This should not be surprising. The UK's education structure is complex with many stakeholders to consider. Delivering a secure exam within that structure is not trivial.

If you ask are schools aware of the latest assistive technology offerings and capabilities, I would say in the vast majority of cases the answer is no. A combination of the rate of change of technology and a lack of time and necessary skills for schools to conduct research make this a very difficult task. There is clear need for OfQual, JCQ and the individual awarding bodies to provide better guidance to schools.

How can Read&Write help young people achieve their potential both in a test environment and more widely?
Not only does Read&Write provide unrivalled reading support in the exam environment, it also takes away the embarrassment of having to put your hand up and ask for the question to be read aloud. The Head of Inclusion at one of the schools using our software told me, "With Read&Write, someone might listen to the same question 6/7 times whereas before they may have felt embarrassed and only asked once. Whereas now they can listen to the question over and over until they understand, and I think that's the loveliest thing."

What are the unique features that set Read&Write apart from other assistive technology solutions?
Here at Texthelp we have twenty years of experience working within the schools industry so we like to think we know a little bit about what the end users need! Our software works with your content whether you're working online in Google docs, on the web or in Microsoft applications. There's lots of free software out there but the beauty of Read&Write is that we've combined all of our tools into one discreet toolbar, making it easy for both the teacher and the pupil to use.

What do teachers and students who are already using Read&Write say about their experiences?
One of the best things about doing what we do is hearing the reaction from kids and teachers who are seeing the software for the first time. It's great to see their faces light up or see them have that 'lightbulb' moment as to how Read&Write can revolutionise their teaching methods or classroom engagement. It's remarkable how many people tell us how Read&Write has helped their pupils pass exams. One story that particularly sticks in my mind is from a teacher at Arrow Vale Academy. She told me, "The main benefit of Read&Write is the ability to use it in Exams. Giving students independence and extra help has really impacted on grades, particularly in the English Exam. One student often refers to the software as her best friend."

What can visitors expect from your stand at BETT 2016?
We've got lots to showcase this year including our Read&Write family of products. We've now moved to a multiple device, multiple platform offering so Read&Write can be used on any device or operating system within schools. With the growth in Google Apps for Education in the UK, we'll also be showing Read&Write for Google Chrome as well as Fluency Tutor for Google. We've been working closely with our customers over the last twelve months to ensure new features provide a great experience for end users.

Rewriting the SCRIPT

STEM careers haven't always been male dominated, says **Sue Black** – and there's no reason why they should be in the future, either...

Back in the 80s, my children and I were living in poverty in Brixton. I knew I needed to do something to earn some money to be able to bring my children up, and because I was good at maths at school, I decided to do a course at college. Following on from that, because I believed technology was the future, I enrolled on a computing degree at university, I then went on to get a PhD in software engineering and became an academic.

When I came into computing at the end of the 80s, the number of women in technology roles was around 20 per cent. I was very excited about the future and the opportunities that developments in technology would bring, so to know now that not much has changed, despite my and lots of other people's efforts to increase the number of women in tech, is extremely disappointing!

What's quite interesting is that back in the 60s, around half of jobs in programming were taken by women, so it was very much considered to be a women's role; there were no stereotypes around it. It's only since the 70s and 80s, when it turned into a business and the realisation set in that lots of money could be made from computing, that the industry changed from being fairly equal to male dominated, and we seem to have got stuck there. This is why I feel we need to rewrite the script and work out how we can move these figures back up to where they were.

Taking action

When I started my PhD in 1994 and went to computing conferences, it was very much dominated by men; in most cases, only five per cent of attendees were women. For that reason, networking was always a bit of a challenge, possibly because women weren't taken quite so seriously.

Then I was invited to a Women in Science conference in Brussels in 1998 and it was completely different – 95 per cent women. Just for the simple fact that I was in the majority, it was a completely different experience, and I suddenly felt at ease. I came back from that conference and decided that I needed to set up an online network for all these women, because I knew from experience that there weren't always as many opportunities for us at these conferences.

So, that year I set up a group called London BCS (British Computer Society) Women, which became very popular with women all over the UK. Due to its success I set up a national group a few years later. I got funding from Central London BCS to run training, focusing on areas such as how to set up a website, which is what everyone wanted to know in 1998. We made some noise about it, and it really grew, with lots of bigger events coming out of it that BCSWomen are now running, like the annual Lovelace Colloquium for female computer science students set up by Hannah Dee. One of the programmes that BCSWomen runs involves going into schools, because getting girls into STEM subjects from a young age is of course of huge importance to us.

> "When I came into computing at the end of the 80s, the number of women in technology roles was around 20 per cent"

School support

I think it's possible to make STEM (science, technology, engineering and maths) more exciting, and of course lots of schools do. From my experience over the years, girls really like solving problems, so perhaps they need to be given problems that they can solve with their teacher, using technology? Problem-based learning can be more engaging and much more fun; enabling girls to actually get their hands on the technology and understand why they're using it.

Many girls still favour 'traditional female' subjects over STEM and I think that's simply because these subjects aren't really put into context for them. There's this belief that the careers linked to those subjects are male dominated, and so from a young girl's point of view, why would she want to spend time studying them at school?

A recent report, by EDF Energy revealed that a third of girls in the UK, aged 11 to 16 don't think they are smart enough to become a scientist, despite it being one of their favourite subjects. Role models are extremely important. I think if you're in a minority, and you see someone who's just like you doing well in a certain area, you're much more likely to think you can do it, too. If we had more girls and women in technology being championed and their paths shown to understand how they got to where they are, it would have the potential massively to boost the confidence of these girls who do have an interest.

Mum's the word

I don't think encouraging girls to use technology is any particular person's responsibility, but I do believe everyone should understand the opportunities it offers, in order to ensure children do make the most of it. There isn't anybody that wouldn't benefit from understanding how to use different technologies, even if it's just sending an email.

I started working with children a few years ago, when they didn't have computing in schools. We ran technology workshops where the children got involved in coding, app design and programming, which they absolutely loved. When their parents came to collect them, we'd encourage the children to get them hands on with the work they'd been doing, because we really wanted them to be involved too. In general, the dads would jump in and have a go, whilst the mums would be more hesitant.

This was another reminder that women sometimes just aren't so comfortable with technology, and at that point I thought that perhaps if I wanted to change the way girls see technology and computing, I needed to ensure the people 'in charge' were confident using it. It goes without saying that mums are pivotal in families, and influence the way children think. So, I decided if we could get them on board and excited about technology, we could be on to something. And #techmums was born!

We live in such exciting times. There are so many things that we can do now that seemed impossible even when I was a child. I really want women and girls to be at the forefront of our advances in technology so that we are all represented on equal footing. We have a massive opportunity now to make the world a better place and technology is at the heart of that. An equal future means a better future for us all!

DON'T MISS THIS!

SUE BLACK

Rewriting the script for women in STEM – Closing the gender gap
Sue Black, award-winning computer scientist, named one of the 'Top 50 Women in Tech in Europe 2015'.

Bett Arena, 12:15, Thursday January 21

Be the CHANGE

Educational apps are great, says **Neelam Parmar** – but only when combined with brilliant teaching...

There is no doubt that technology integration in the classroom is the way forward for 21st century teaching and learning. Indeed, to visit a school that does not use technology in education already seems strange! A collection of recent studies by researchers from the National Endowment of Science, Technology and Arts (Nesta 2012 – 2014) show that technology can boost learning – but much too often it is used without a strong understanding of its power to transform education and as a result, many institutions are still using technology to support 20th century teaching methods and learning objectives.

About three years ago, there was much hype about what type of technological device to buy, ranging from Google Nexus to Samsung to iPads or Surface tablets. Educational technology was a risky game then and required much investment in a short period of time. The big question for schools was "Which would be the better investment for long term strategy, taking into consideration the growth of educational apps?" As it turns out, it makes no difference which one is the bigger or better player in the market place. Within education, all three players, Apple, Android and Windows have over 100,000 educational apps in their store. These apps are found to appeal to the children and add variety to teaching and learning. They have emerged in classrooms where teachers use them to enhance and enrich their lessons in subject specialist areas, such as reinforcing one's times tables, or learning vocabulary.

So, while the introduction of subject related educational apps is often the common use of edtech in classrooms, its use as a playful learning tool with little or no pedagogic instruction makes it limiting. Many schools still find themselves in a situation where the technology is used as an add-on and not integrated seamlessly into the lessons. Although there is evidence to show that educational apps are productive in encouraging engagement and motivation, the killer app is still the teacher and pedagogic interactions that take place between him/her and the students (Parmar 2014).

Flow Charts

There is an argument that in order to build deep, conceptual understanding and higher order thinking with the children, technology based lessons still require intensive teacher-student interactions. Additionally, there are observations to suggest that schools have not yet become good enough at the kind of technological pedagogies required to make the most of technology in their classrooms. So, how do we adapt using educational technology in 21st century education? In order to create great teaching where the use of technology can amplify learning and development, a pedagogic workflow, incorporating all traditional elements of teaching practices and the current educational apps, becomes necessary.

This so-called pedagogic workflow is the disappearance of walls and enclosed structure of the classroom, creating a flexible space where both the teacher and student can communicate seamlessly through various means of digital channels. It is the use of a blended learning approach where the technology becomes transparent. It is the pencil case design incorporating teaching strategies, where the student and teacher can flip between working on paper, capturing data digitally and producing an end result in the cloud. It includes the seamless and effective option of feedback and assessment, which can take place in real time or within a few days of submission of homework. It is the curation of all materials in one location, highlighting areas of metacognition and differentiation, sewing together various teaching resources of videos, images, worksheets, quizzes and content to external applications such as YouTube, e-books, and subject specific apps which are both transferable and available to the students anywhere, at any time and in any place. To be clear, it is the facilitation and instruction of learning processes rather than the more directive methods of teaching.

> "The term 'teaching' can be quite misleading and often means taking a top-down approach, as seen in most schools still today..."

Digital Design

This shift of mindset in understanding 'teaching' vs. 'instruction' enables us to start creating an appropriate edtech pedagogical workflow. The term teaching can be quite misleading and often means taking a top down approach, as seen in most schools still today. When teachers come to understand that through technology, they are offering instructional processes, a digital workflow can be better understood and created.

Whether this is conducted via an iTunes U course in collating posts and assignments together, or the Office 365 environment using the various Microsoft products to submit and/or exchange discussions of homework, or even the Google Classroom where students access shared documents and teachers provide feedback via the Google apps, it makes no difference. The key message is that it should enable both the teacher and students to access learning and collaboration at a developmental pace, sharing direct instruction and collaborative learning.

We have long passed the debate of what type of technology to purchase. We have also passed the time to match apps to curriculum needs. There are plenty of websites that promote this use. We have, however, arrived at a time where creating a pedagogical workflow in classrooms (and eventually in school culture) is necessary in order to utlise edtech at its best. Although technology has the potential to amplify great teaching and is there to help teachers to do their job more efficiently and effectively, it is important to remember, it is not there to replace them. Teachers are still the catalyst that will facilitate the instructional processes in an educational technology environment.

DON'T MISS THIS!

NEELAM PARMAR

Integrating technology within lesson delivery: focusing on pedagogy and educational outcomes for learning – Neelam Parmar, Director of E-Learning at Ashford School, United Learning Trusts

Learn Live: Primary theatre, 15.00, Wednesday 20 January

OPPORTUNITIES FOR ALL

Learn how to use technology to support autistic students at a potentially life-changing conference...

The National Autistic Society

Technology is changing the way autistic individuals interact with the world, helping people in numerous different ways. Advances in technology mean that it can now be used to help people learn and develop new skills whilst also working as a platform for autistic individuals to communicate more easily and freely.

The Technology and Autism Conference (2 February 2016, London) aims to give you the tools and knowledge to support and help autistic people through technology. It looks at how technology can be used to facilitate real life interactions and what it means to be an autistic person growing up in a high-tech world.

The conference will also explore the various ways technology can affect the lives of autistic people and their families, carers and teachers, its benefits, including increasing social skills but also the risks it can present, such as victimisation and cybercrime.

Key speakers will present the latest technological research and developments. Dr Matthew Goodwin, Interdisciplinary Assistant Professor at Northeastern University, Boston, will discuss developing innovative technology to enhance research and practice with autistic people. Jamie + Lion and Gareth Ford, accessibility specialists from the BBC, will look at what it means to be an autistic person in today's high-tech world.

A series of different seminars will look at: keeping safe online and the particular vulnerabilities that autistic people may have when using technology, technology as a communicative tool providing a digital voice for those who do not speak and independence, and how technology can increase an autistic person's confidence and skills.

The National Autistic Society (NAS) is the leading UK charity for people with autism (including Asperger syndrome) and their families. The NAS provides information, support and pioneering services, and campaign for a better world for people with autism. This conference is a rare opportunity to learn and network with other professionals.

To read the full programme and to register visit www.autism.org.uk/techconf

COMPUTER SCIENCE SUPPORT

Leading computing author and examiner George Rouse explains how Hodder Education is supporting the new specifications in GCSE computer science...

BETT STAND NUMBER: C116

HODDER EDUCATION LEARN MORE

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 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 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.

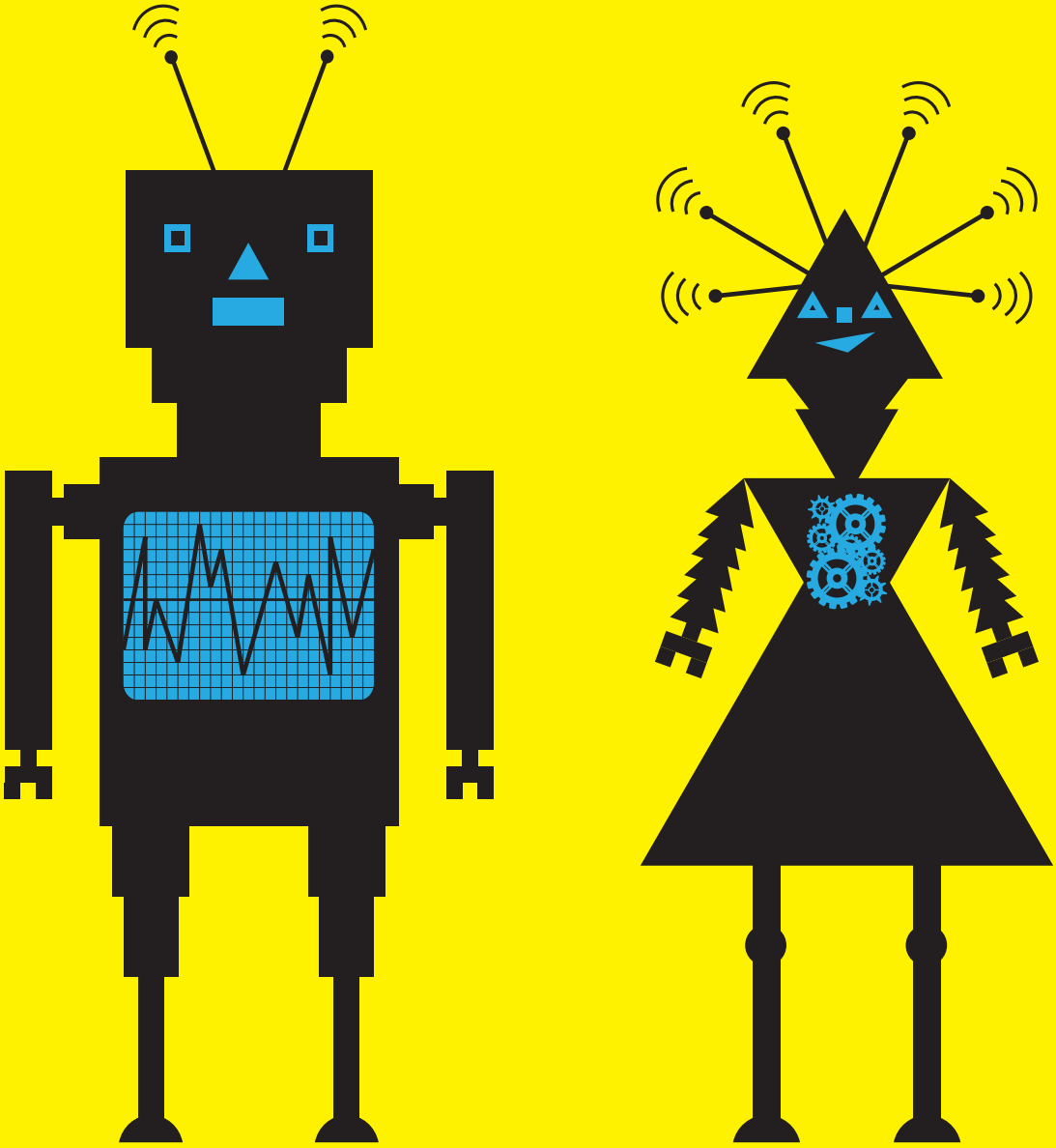
In addition, Dynamic Learning teaching and learning resources at Key Stage 3 and GCSE provide assessment opportunities throughout the course to ensure individual student learning is on track at each stage.

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, call 01235 827827, or email education@bookpoint.co.uk

Intelligence BY DESIGN

Whether you are scared or excited at the prospect, robotics is the future – and Bett 2016 is the perfect opportunity to find out what that means for you and your students...



Developing the finer motor skills, a sense of touch and hand-eye coordination are all skills we'd expect to see a focus on in early years education, but at Sheffield Robotics, a research institute with over one hundred active researchers, the same learning is aimed at robots.

As director of Sheffield Robotics and as professor of cognitive neuroscience at the University of Sheffield, Tony Prescott has spent many years researching and publishing articles in the areas of cognitive psychology, brain theory, and bio-inspired robotics. In recent years he has turned his attention to designing and programming robots that can interact with people and assist them in their daily lives.

His session at Bett 2016, entitled 'Life-like robot companions for entertainment, education, and assistive living', will consider how animal-like or humanoid robots have the potential to impact on the lives of children at home and in school. Prescott will be joined by some of the robots from his team such as Zeno, a robot boy with human-like facial expression, and MiRo a pet-like robot with floppy ears that is curious and friendly.

Speaking in the Bett Arena at 3:15pm on Friday January 22 Prescott will explain how he is developing robots that are modelled on how human and animal brains are able to think and learn, and how he is developing robots that have some awareness – of their own physical 'bodies', of what has happened in the past, or might happen in the future, and of the people and other robots around them.

Prescott's future mission is to develop robots that use these skills to be more useful to people - for instance, to assist children to learn at school, or to provide physical help or social companionship at home.

No fear

Science fiction is full of images of scary robots that have become a threat to humanity, often as a result of becoming super-intelligent. Prescott responds to these concerns by explaining that "we are a long way from creating robots that are able to match the versatility and flexibility of the human mind. However, we can build robots whose intelligence is complementary to our own and that can take on tasks that humans are poor at, or that we don't want to do. Ultimately, the benefits hugely outweigh the risks." Using assistive robots with children with specific developmental needs is one exciting possibility. For instance, many children with autism love interacting with robots and there is evidence that playing with life-like robots could even help to improve children's social skills.

Prescott is working to develop robots that can help older people too: "We face a future where there will be many more older people and proportionately fewer younger people. As this happens, society could benefit from the development of robot helpers that help around the home allowing older people to continue to live active independent lives."

Prescott and his colleagues at Sheffield Robotics are also developing robots that can operate in hazardous or outdoor environments, from flying robots, to tracked robots, to teams of tiny robots - in the future robots could take over a lot of the dangerous and unpleasant work that currently has to be done by people, allowing humans to focus on the things they enjoy and are better at.

As a psychologist, Prescott is also interesting in building robots in order to better understand how our human minds operate. Using a humanoid robot called iCub, Prescott is testing theories of the processes underlying human behaviour by trying to replicate that behaviour in the robot. Ultimately, this research could lead to more useful robots and also a better understanding of ourselves."By building robots we start to understand how animals think and how brains influence behaviour."

Classroom helpers

One core audience for the Sheffield team is teachers; robots have lots of potential for teaching the STEM subjects. For instance, GCSE computing has changed to include a greater emphasis on programming and robotics can provide a great platform for teaching programming skills in the classroom. In the in GCSE in Design and Technology, bio-inspired design has become part of the curriculum, which is a good match to Prescott's interests and research which takes ideas from biology in order to build better robots.

Prescott is currently involved in a European project to investigate the potential for robots to assist children to learn about healthy living and exercise. This research is also looking at how children interact with robots, and what features of robots, such as the ability to make life-like facial expressions appeal to girls and boys of different ages.

There are a number of exhibitors at Bett who focus on the learning application of robotics. Anyone interested in considering how robotics can enhance the STEM curriculum should certainly add these exhibitors to their 'visit' list for their day at Bett.

And of course, they shouldn't miss Prescott's session in the Bett Arena, during which he will be encouraging a two-way dialogue asking what teachers might want from robots and how future robotics research could help create new digital educational platforms for teaching.

"DON'T MISS THIS!
TONY PRESCOTT

'Life-like robot companions for entertainment, education, and assistive living' - Tony Prescott, director of Sheffield Robotics and as Professor of Cognitive Neuroscience at the University of Sheffield

Learn Live: Bett Arena, 15:15, Friday January 22

THE RIGHT TRACK

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BETT STAND NUMBER: B228

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Practical SOLUTIONS

Chris Aitken explains how Apps for Good is helping to close the gender gap around computer science and coding in his school...

At Wick High School, we have been looking at ways in which we can engage girls in STEM and computer science, because in the past they've not been subjects that they have chosen. I'm still not 100% sure why - however, I do think that there is a significant unintentional bias because they are not exposed to computer science from an early age in primary.

For us, the Apps for Good course has been transformational. Since we introduced it, there has been a fundamental shift in who's doing it and why. This is our fourth year of running the course, and year on year we're seeing a significant increase in the number of girls choosing it – so, we must be doing something right!

Creative thinking

I've been speaking to the girls and finding out why they choose to study computing through the Apps for Good course, and as I expected, it's the fact that there's a stigma attached to coding: that it only appeals to boys. This is evident in our school, in the fact that boys are immediately keen on the coding aspect of Apps for Good, whilst girls start off a little sceptical. It's the creative element of the course, and the group-work side of it, that instantly engages girls, and that is where they shine. I think that's because they tend to look at the wider picture – they like identifying a problem and coming up with a design to solve it.

Just to explain the Apps for Good course: our students identify a problem in their teams, they then do some market research, including surveys and interviews, and design app wireframes based on what they find. They really engage with the whole process, because they're learning for a specific reason and feel like they're making a difference. They are also picking up skills that they need - and want – in order to be able to progress with their ideas.

This year we've seen a record number of students choosing the Apps for Good course, which we offer to all of our students as an option in our third year curriculum; a 300% increase, in fact – and we've noticed that it is definitely encouraging more girls to choose computer science as part of their education. Once they overcome the stigma, and realise the opportunities coding offers, they are away.

We had an app designed by a group of girls last year called Envirocache; their idea was brilliant, their design was fantastic, and not only did they design it, they went the extra mile and coded it as well, so created a semi-working version of the app, integrating Google Maps and things like that. The most amazing thing of all was seeing them when they saw a live preview of their app on a phone; you could see how blown away they were by it – the fact that they had created it themselves.

Student led learning

The change in interest with this course means that learning has shifted. It doesn't really come from the teachers anymore, but from the children - and the teacher's role is to guide, facilitate and make sure they're on the right track. The students know that they need to learn in order to progress their idea, and because the idea is theirs, they really buy into this.

There's real incentive for them as well, because once they've created their prototype, they get entered into the Apps for Good competition. If they get through to the finals, they go down to London, then if they win they get their app made professionally. This is our fourth year of taking part, and our students have won at least one category for the last three years; we're really happy with the success, it reflects how much they love it. We're currently in the process of developing our One Click Politics app, designed to get young people engaged in politics. It will be launched on February - watch this space!

It's also great to see, particularly in our school, that there is a 50/50 split in terms of girls and boys - that was our target, to get that even divide and lose the unintential gender bias of the past. I think it's important that we get these girls engaged, not only in the early years of high school, but also the early years of primary - we need to reach a stage where primary-aged children are exposed to computer science, because that's what will help remove the stigma around it.

It's not only good for schools, it's good for industry too. The talent pool for jobs in technology is currently halved, because the industry is missing out on girls who have previously not been interested. We'll hopefully get there in the end, but it absolutely needs to be encouraged from the grassroots up if this is going to change.

"It's the creative element of the course, and the group-work side of it, that engages girls..."

"DON'T MISS THIS!" CHRIS AITKEN

Creativity and code: getting more girls in STEM - Chris Aitken, computing science teacher at Wick High School

Learn Live: Secondary Theatre, 10.30, Wednesday January 20

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** Total number of Casio projectors purchased equals total number of trade in units allowed. £50 is only available when users purchase a new one Core XJ-V1 projector. All other models are entitled to £15 trade-in payment. This promotion ends on 31st March 2016.
† In 2010, Casio launched the world's first Laser & LED Hybrid Lamp-free projector over 2,000 ANSI Lumens.
* Whichever comes first.

PRIZE PERFORMANCE

At Bishop Challoner Catholic College, Casio's unique lamp-free projectors are having a positive effect across the whole school...

CASIO PROJECTORS

At last year's BETT Show (21st – 23rd January 2015), Bishop Challoner Catholic College in Birmingham was one of the lucky winners of Casio's projector giveaway which celebrated five years since the manufacturer has gone completely lamp-free.

The college was already in the process of switching to an entirely Laser & LED projection fleet so was familiar with the Casio offering and how the hybrid technology can contribute towards long-term goals of energy savings and efficiency. The college opted for five of the Green Slim (XJ-A132) units.

IT Manager Michael Dean already believed first hand in the benefits of Laser & LED after seeing Casio's unique lamp-free offerings at a trade show and could instantly see the benefits for overcoming reliability and dependability issues.

"We had become increasingly frustrated with traditional lamp-based projectors, as their failure was really starting to affect student learning," he explains. "You were never able to predict when a lamp could fail and often it was at the least opportune times, such as during the middle of an important lesson, or a student presentation. It meant that teachers always had to factor in a back-up plan, just in case."

Instant improvement

When Casio's Laser & LED projectors came into the picture, it changed the school's whole approach to projection technology – and budgeting, too.

"We always had to ensure previously that we reserved some of our technology budget for replacement lamps, which meant that projector upgrades were a slow process. When we made the move to Casio projectors, this concern was immediately eliminated," Michael notes. "We no longer have to worry about the filters clogging up causing the projector to overheat and cut-out, as this method of image generation doesn't emit any heat, and we don't have to factor in the replacement costs every 18 months. With Casio, it's been a case of installing them and knowing that we can have total confidence that they will work whenever we need them". Casio Projectors also offer a unique 5 year / 10,000 hour warranty, which acts to extend that total peace of mind for end users.

Michael selected the XJ-A132 models for the competition prize, due to the great experiences he had with the previous XJ-A130 projectors he had installed. The school valued them for their small size and the fact that they are so lightweight, which makes them neat and unobtrusive to mount. They are ideal for any location in the school, as classroom set-up or low versus high ceilings make no difference. The brightness is superb and the sharpness and clarity of picture is amazing for lessons, and the projector has a 1.2 x optical zoom, making it the ideal replacement projector.

"Our teachers use them all day, every day, to improve their lessons and keep students engaged with learning so the constant brilliance and reliability of the image, with no fading over the lifetime due to no aging parts, makes them fantastic projectors for use in classrooms. The low energy consumption of Laser & LED based projectors also means a lower running cost with their constant use," he explains.

Future perfect

Laser & LED projection presents a new method of generating an image, removing the lamp and subsequently harmful mercury from the system and replacing them with two of the most sustainable light generation sources on the planet, Laser & LED. Michael has found that the projectors have already paid for themselves in their low total cost of ownership for the school and increased peace of mind and confidence in the technology.

"Overall the TCO is so much lower than with lamp-based projectors, yet the picture is much brighter and clearer. The 5 year or 10,000 hours warranty is just the icing on the cake of a fantastic product which is helping our teachers to deliver brilliant lessons with fewer worries about problems with technology."

Bishop Challoner's will continue their investment in Casio due to the returns in reliability, the low running costs, high efficiency, and performance.

Find out more

Aligned with its mission to provide schools like Bishop Challoners Catholic College affordable and sustainable, high quality projector solutions, Casio will be launching a new projector model at this year's 2016 BETT Show. Designed with the multi-functional classroom in mind, the new model will boast high brightness at and budget-friendly price point. For more information on the new Casio models and all the latest news, sign up online at **http://projectors.casio.co.uk/signup**

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Brick'R'knowledge offers the building blocks to electronics success.

All Brick'R'knowledge kits, including individual bricks, are now available in the UK from: Dave Williams, G8PUO, DitroniX (www.ditronix.com, info@ditronix.com, 020 8144 0732 or 078 0707 4538)

CLICKVIEW FLIPS LEARNING ON ITS HEAD

Discover a new way to engage students with videos...

BETT STAND NUMBER: B300

Challenge for video learning

The biggest road block to showing videos to a class, whether it is a prep class or sixth form, is maintaining student engagement. It can't be monitored, it wastes valuable class time and it is difficult to prevent. ClickView has recognised this as a challenge for schools worldwide – and has come up with a solution.

Introducing interactive videos

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Increasing student engagement

Recent studies have observed that 'student engagement' is more than a single concept. It relies on the students' motivation to learn, their participation in discussion and classwork, their understanding of academic concepts and how much they interact with classmates and teachers. ClickView Interactive Videos touch on each of these: The video content is lively and interesting, providing motivation for the student. Teachers can look at the answers given by students and alter lesson plans based on their class' understanding. Students can also watch videos at home before coming to class, encouraging a flipped classroom where they have more time to interact with their students and teachers in class.

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Flipping the classroom with ClickView Interactive Videos

An example of the questions presented to students during ClickView Interactive Videos

The PAPER TRAIL

If your school's print management solution is not as efficient as it could be, you might be surprised to learn just how much time, and money, is being wasted, says Andrew Hall

Let's face it. Printers aren't often top of the agenda when it comes to School Development Plans (SPDs) – even as part of the programme of operational efficiencies. But why not? It's true that academic vision should always come first. But new developments mean that printers can play a role just as strategic – or even more so – as any other technology.

Perhaps it's time for a rethink. By ignoring the entire print function, schools are missing out on a major source of savings and efficiencies. Printers have changed – and with this their role in organisational workflow has transformed too.

This may be hard to imagine if your school still runs clunky, outdated models that break down too often. They probably take weeks to fix because nobody quite knows who to call. Typically, printers and printing are seen as add-ons to the IT function.

Devices are only replaced as old models begin to fail. Then – quite understandably – there's the temptation to go for the best deal at the time. As a result, schools end up with a mismatch of makes and types of printer, all with varying maintenance contracts and demanding different consumables.

Then when it comes to print volumes and permissions, schools tend to fall into one of two camps. Either it's a free-for-all with profligate use of paper printed on one side only, or there are draconian rules and forms to sign in triplicate – and that's just for the teachers.

The bigger picture

With all this in mind, the thought that printers could play a strategic part in the school's development, appears implausible. However, many more schools are now taking a broader view and looking at the print function as a whole and managing it more closely. They are using some of the savings from this to invest in new multifunction models, which in turn will bring fresh savings through improved document management and the reduction of paper-use.

So where's the best place to start? If in doubt, audit. Gather as much information as possible about the current situation. Who prints what, where when and how? Where are the printers placed? Do students use iPads or other tablets and, if so, does the school need mobile printing facilities? Does it outsource the production of brochures or programmes? Is there a need for security (of student and staff records, for example, or in the head's office)?

If no-one has time to do this, many printer vendors and their partners can take on the task as part of a managed print service. Because efficiencies and cost savings are the ultimate aim, return on investment is almost inevitable and often extremely rapid. Using their expert help, the school will then be able look at the print function more strategically.

The subsequent advice will then cover the school's entire operation. For example, recommendations for classrooms will likely include the new affordable models with a small footprint so they can be tucked in the corner. New LED technology means that these can print thousands of pages at a fraction of the cost – and energy usage – of inkjet devices. They are also quieter and, as they have fewer working parts, far more reliable.

If colour printing is needed in the classroom, there are now solutions available that enables teachers to assign access levels so that the printer automatically determines whether or not incoming jobs should be printed. This is usually password protected, but the policy can be changed in real-time for special projects. These solutions also enable administrators to view job logs to analyse how devices are being used.

If the school encourages the use of mobile technology within the learning environment, there are Google Cloud Print ready and Air Print 2 ready so that students can print documents wirelessly to cloud-connected computers from any mobile phone, laptop, PC or any other web-connected device.

Streamline and save

Next, let's turn our attention to the school office to examine organisational workflow and processes and consider how these can be streamlined. This is where new, smart multifunction printers (MFPs) come into their own. Typically these powerful devices include automatic fax or scan to email with security function for confidential work.

"By ignoring the entire print function, schools are missing out on a major source of savings..."

They enable documents to be stored without first being printed and then easily accessed when needed. Some have embedded software and can capture documents from a variety of sources and convert, distribute or upload to a chosen location. In this way, these MFPs provide great flexibility to manage and share documents. Importantly, they are also very easy to use with customisable touch screen panel and easy to read menu screen.

Finally, if a school regularly outsources its high end printing such as brochures, programmes or training materials, it should certainly investigate the latest developments in high-end colour printing.

There are now small footprint A3 printers on the market which combine top quality colour with the functionality of a day-to-day A4 device. Also graphic arts printers – once thought only suitable for the professional print market – are now at a price that schools may consider. Besides, they will also provide a fast return though bringing the printing of stationery, leaflets and banners in-house and can even help schools raise funds through printing mugs, T-shirts and other merchandising. Some vendors and managed print services providers can even provide templates for teaching materials and fund-raising.

It's been proven that organisations can save around 30% of printing costs by giving their printing an overhaul and working with a managed services provider. The promise of savings of this order, should certainly earn it a place in your next SDP.

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- Even those using colour printers should print in black and white for internal use.
- Switch off printers at night.
- Ensuring printers are configured and set up correctly to help reduce unnecessary printing and the costs involved with it.
- Talk to a managed print services provider to consolidate these savings and to make further recommendations.

ABOUT THE AUTHOR

Andrew Hall is marketing manager Oki Systems UK (www.oki.co.uk)

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Print Smart. Print OKI

EMPOWER YOUR PRINTING

Andrew Hall explains how Oki Systems UK can save money for schools...

At OKI we recognise the benefits that printing brings to education. It can help raise the standards of teaching materials, training aids and marketing documents – and can even spark the creativity of teachers and pupils. However, we are also aware that many schools don't have a clear view of spend or total cost of ownership of their printers and we are keen to help them get this under control.

Thankfully, some schools are now adopting a more formal print policy, working with the help of managed print services providers such as OKI. This usually begins with an audit of existing practices including output volumes and printing types. By achieving this transparency, schools can start to understand where their budget is being spent.

The first big benefit of working this way is the exchange of multiple maintenance and consumables contracts all with different vendors for a single contract embracing all these services and more. This saves time and ensures printers are kept in top working order. It may involve replacing bulky old models with new energy-efficient multifunction (print, scan, copy and fax) devices that tuck neatly in the corner of a classroom or office.

This type of managed print services programme has been shown to save around 30% of printing costs, depending on the size of printer fleet and other variables. And it does this without the need to raise capital expenditure to make long-time operational savings.

Instant expertise

However, perhaps the main value of working with a managed print service provider is the consultancy they can offer. For example, they will be able to advise a school on bringing all its printing in-house, including brochures, programmes and other high-end printing which is usually outsourced. This alone has the potential to provide considerable savings, plus a new flexibility where materials can be printed in short runs and on demand. There are even printers that can print on mugs, T-shirts and other materials, if schools wish to develop a new revenue stream or a fund-raiser.

With the growing use of tablets and smartphones in education, the ability to print on demand on any printing device is also becoming important. OKI offers a range of multifunction devices which are mobile print ready. This means that teachers and students can wirelessly print documents to cloud-connected printers from any web-connected device.

There's little doubt that a managed print services programme is one of the few chances today to save costs without sacrificing quality. It will help streamline investment and maximise the operational benefits of the organisation's entire print estate.

Further information

Oki Systems UK, part of OKI Europe, is one of the UK's leading printer brands, offering a wide and versatile range from affordable, small footprint, entry level devices to sophisticated multifunction solutions with embedded software to help manage documents. With all its experience, particularly in the education sector, and such a selection of devices on offer, it is well placed to become a long-term partner of any school or other educational institution.

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AHEAD OF THE GAME

Since the arrival of teacher Paul Tyrrell a year ago, Maltings Academy in Essex breathes STEM like no other – **Kelly Clark** caught up with him to find out more...

A year ago, Maltings Academy celebrated its annual activities week with the usual break from routine, giving its young people an opportunity to try their hands at something different. It was a time to throw out the timetable and mark the end of term with an emphasis on having fun. This year, everything changed. The five days were seen as the ideal opportunity really to launch STEM to the entire school – children and staff. Paul Tyrrell had already captured the attention of a niche of students who joined his new STEM club, but he knew the whole school needed to buy into this futuristic approach to learning. So, along with his colleagues, he achieved what no other school has ever done... he got every one of the 665 students to achieve the CREST Discovery Award from the British Science Association.

"STEM week really hooked the kids in," he explains. "They had an experience of things they would not normally have the opportunity to do. As a result, recruitment for STEM club has doubled and we have seen a different type of student come and show an interest."

The SLT at Maltings is fully behind STEM, enabling Paul to invest in the technology needed to give students the best opportunities to carve out modern-day careers for themselves. "I came into teaching late," he says. "I worked in the organic chemistry industry for six years and also worked abroad; I've had quite a diverse career. For me, you never know what the future holds so having the broadest skill set you can is really important. Subjects also do not stand on their own; they all work together. As a scientist in school now, I know to be a rounded person and to be a success you need maths and technology. We are trying to think about the kids and their futures. We look at the jobs which are available and try to prepare our students for those positions; that's my top priority."

In it together

From robotics to computer programming, Maltings children have a clear understanding of hugely technical projects and the skills needed to complete them. Even their teacher is learning all the time: "STEM club gives me the opportunity to let the children explore for themselves, to make mistakes and spend the time learning from them," observes Paul. "As teachers, it's our instinct to step in if we see students heading down the wrong path with their work. The beauty of this being extra-curricular is we have the time to really learn strong lessons independently. Sometimes, I quietly think

they're heading the wrong way and they surprise me by solving the problem in a way I didn't think possible. As a teacher and a scientist, it means I am learning, too.

"Now they've had a taste of STEM, students come to me with ideas of projects they want to work on, rather than relying on me to set them a challenge. A lot of Year 9, for example, are now planning their own technology projects which means they get a lot more out of it as it's something they want to do. I can write computer code now because the kids asked if we could do it; I had never done that before in my life.

"STEM has had an impact across the school and plays a part in day to day teaching. STEM week was a good relationship-building event and has resulted in departments working far closer together. It encouraged teamwork between groups of kids, but also between faculties."

Ahead of the game

The school won its first Raspberry Pi – low-cost, credit card-sized computer – for making it through to the second round in a competition to devise and code an app to be used from the international space station by British astronault Tim Peake. A fundraising stint means the school is now ordering more as it discovers further ways to use the technology.

"Raspberry Pi is growing massively," confirms Paul. "We have all sorts of projects planned with them; from a sensor to be worn by a person to monitor their heart beat and temperature, to a Pi set up on the school's Greenpower electric car to record its speed, battery life and other data to help improve the car – just like the F1 teams do. We are also looking to use a Pi as a web server and to set up a STEM club website run by students, as well as sending a Pi up to space! The opportunities are endless. For £50, you can buy a Pi, plug it into a keyboard via USB and you are up and running."

Vex Robotics, a design system offering students a platform for learning about STEM through building robots, also arrived at Maltings along with Mr Tyrrell. He had developed a team at his previous school which won through to the world finals of the Vex competition in California and so was keen to launch a robotics club at Maltings. "Vex is a much more technical version of Meccano with a very powerful computer which controls it," he observes. "Every year, Vex launches a new competition with different rules and criteria to follow to build a robot. It is completely cross-curricular as it involves every skill, including problem-solving. Students have to learn to code in Robot C which is a massive skill to learn, so we get computer programmers to come in to teach the children."

With such a high profile within the STEM world – he recently went to Iceland with the STEM Network and Science Learning Centre for more STEM training and offers outreach support to other schools – Paul Tyrrell is helping exam board AQA to shape a future GCSE course in the subjects. He says it will be the first time a GCSE will depend on several faculties working together to deliver a course. "The world is changing, the curriculum is changing and what the kids want to do is changing. Instead of kids who are couch potatoes playing their Xboxes, we want to create the children who go on to develop the games for those consoles.

"In the next two or three years, I think we will see a STEM GCSE arrive. As part of the STEM Steering Committee with the STEM Network, I am being asked for my feedback on how the course might be delivered. When it arrives, Maltings will be one step ahead as STEM is already ingrained in everything we do.

"STEM grows from the school. You can't expect to do it all straight away. What we can do is empower people with a vision. Teachers and schools end up better for it and children have much better life skills, ambitions and motivation."

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"There's no such thing as an iPad lesson"

With the right support, even a self-confessed digital dinosaur can use technology for better teaching and learning, says **Nathan Ashman**...

Something I hear in schools all the time is: "Today, we're going to do an iPad lesson". This really frustrates me, and sums up a lot of teachers' misconceptions about the use of this kind of technology in the classroom. There is no such thing as an iPad lesson. We're not teaching children how to use iPads; we are teaching with the iPads. Most children in schools today are digital natives - they are probably far more familiar with the workings of an iPad than you are. You wouldn't say "we're having a paper and pen lesson today", so the same thing applies with technology.

However, this is still something that most schools are struggling to implement. At St Wilfred's CofE Academy, I was put in charge to lead strategy concerning 1:1 devices and mobile learning within the school as well as help assist with staff concerns over the implementation of technology in the classroom. Especially for those teachers from a generation before technology was so firmly embedded in daily life, there can be an element of fear that should something go wrong, or the technology not contribute positively to the lesson or cause disruptions, that they may lose control of the class. More than that, there is an ongoing concern amongst teachers that it can be challenging to monitor exactly what a whole class of pupils with individual iPad's is up to.

"There's no need to be fearful of technology. When properly used, it can open a whole range of opportunities for better and more effective teaching and learning."

Shared confidence

This is precisely the kind of concern which I address at my school on a daily basis. We have to be creative in our approach, as a prescriptive method doesn't work, but since I started last year, I have noticed a change in attitudes. Staff are becoming more positive and confident when using technology within the classroom.

At St Wilfrid's, just as at any school, there are varying degrees of competencies amongst the staff. Some are simply a little unsure how to maximise technology's value in their lessons, whilst others really need a full breakdown of how it works.

However, what is true of all staff, not just at my school, is that being dictated to in regards to how to use technology is a sure-fire way of putting them off.

Fostering an attitude to learning as a shared, organic process within the school is key. Coming in and enforcing a set of rules as to how to use technology in too rigorous a fashion is off-putting, as well an unconducive to an attitude of shared learning and development.

I started doing a 'New Tech Breakfast' session at our school as a way of combatting this and to help sow the seed of technology inspiration in teachers. It was quite a simple set up; some croissants and coffee, with me offering a ten-minute chat on a given topic each week, such as learning about a new technology or a giving a troubleshooting session. Then we'd have a discussion about it and I'd leave them with something to think about or to try and implement over the coming week. Then when we all came back together, we'd discuss how these worked out in practice and share ideas or experiences. It wasn't regimented – no one was forced to attend or asked to do their 'homework' – but more and more people started to come, and staff were really engaged. From a small group of five staff members to begin with, we grew through word of mouth throughout the school. Now we can have up to 30 teachers coming each week, all sharing advice and navigating the technology together, collaboratively.

This has really helped to foster a genuinely positive attitude to technology in our school, as well as helping me in my job. People now feel a lot more comfortable coming to me with questions and trust my suggestions or advice. They know that it isn't about forcing ideas on them, but about working together to find a way to best use technology for the children's benefit.

Generation genius

It's not just me they are learning from, though. The children have a lot of knowledge they can and are willing to share, if we give them that opportunity. This week we've been rolling out iPad's throughout Year 7, which is a logistical challenge with a lot of energy going into making it run smoothly and addressing the concerns of parents, as well as pupils. At times like this, it's great knowing that I can rely on pupils to help. We've introduced 'iGeniuses' to our school to help with iPad and technology related issues, peer to peer. These are students from across the school, all with a variety of interests, who are on call to help their fellow pupils make sure their tech-tools are working properly.

Not only does this help teachers out, but it gives the iGeniuses a sense of responsibility, as well as consolidating their own learning. Sometimes, these students are able to offer things to pupils and staff that we can't, or may not have thought of. For example one girl who has recently become an iGenius has a visual impairment; she uses screen enlargement features and special apps to help with her impairment, which she will be able to show other students with similar needs.

Those who already embrace technology understand that it's designed to make life better and easier – both inside and outside of the classroom. What I want to do at Bett is try and convince the 'nay-sayers' that this really can be the case in their classroom too. There's no need to be fearful of technology. When properly used, it can open a whole range of opportunities for better and more effective teaching and learning.

DON'T MISS THIS!

NATHAN ASHMAN

New Tech CPD for Digital Dinosaurs – Nathan Ashman, lead teacher of new technologies at St Wilfrid's C of E Academy

Learn Live: Secondary Theatre, 15:00, Thursday January 21

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Q&A YPO

Amy Shelley, category buyer, explains what YPO has to offer schools...

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T&I: How are you able to help schools meet their procurement needs within increasingly tight budgets?
AS: YPO has been providing school supplies since 1974. We listen to customer feedback, act upon market changes and hold focus groups to ascertain the extent of our customer needs.

Schools can use our frameworks and not worry about conducting a formal quotation process. They are free to use, and are fully compliant with EU regulations. We work with our suppliers to ensure that prices are competitive. All of this makes sure our customers receive best value.

That's just for stationery though, right?
Not at all. We do have a large stationery offering amongst our wide product range however, we have a developing and innovative technology arm. We offer anything from interactive flat panels and sensory pods through to projectors and visualisers.

With the introduction of computing and coding in the curriculum, we want to ensure we have the right products to help customers teach the generations of tomorrow. For 2016, customers will have a chance to see our new range of products, which will act as great aids in teaching and learning.

Tell us about the frameworks you are able to offer.
Our new framework for interactive solutions covers: interactive whiteboards, flat panels, projectors, installation and delivery services. The framework also covers any brand such as SMART, Promethean, Clever Touch. We have excellent suppliers working with us to offer the best solutions and will work with customers from site survey, through to delivery and installation to ensure they receive the best service throughout the process.

What other ways do you work with schools?
We work closely with teachers and head teachers to ensure we get the right product and feedback from schools. This helps us pinpoint where we can improve, and ensure our product range is relevant for customer requirements. We also provide CPD courses for teachers. Topics range from music, art and maths through to computing, English and the Humanities. This is a great way for teachers to gain professional development outside the classroom.

THE COMPLIANCE CONUNDRUM

It's one of the most widely used terms in education today – but how many of us know what 'engagement' really looks like, asks **Dan Haesler**...

In schools compliance is sometimes regarded (and often rewarded) as engagement. Does he follow the rules? Does she sit quietly in class, raise her hand to speak and wear her uniform correctly? Sometimes we describe a student as 'engaged' if he or she does little more than conform to what is expected – but although that young person may still do well in school, if we do so, we are missing out on the very real benefits of genuine engagement.

Within psychological circles, the accepted definition of engagement is: the sense of living a life high on interest, curiosity and absorption. Engaged individuals pursue goals with determination and vitality. Froh et al. (2010) found that adolescents who had a sense of engagement reported higher levels of wellbeing, life satisfaction and less problematic social behaviours. And to help us convince those colleagues of ours who believe school is only about test scores; these students also reported higher grades.

So clearly, 'engagement' is everyone's business. But be honest – are your students genuinely engaged? Or are they just doing what's expected?

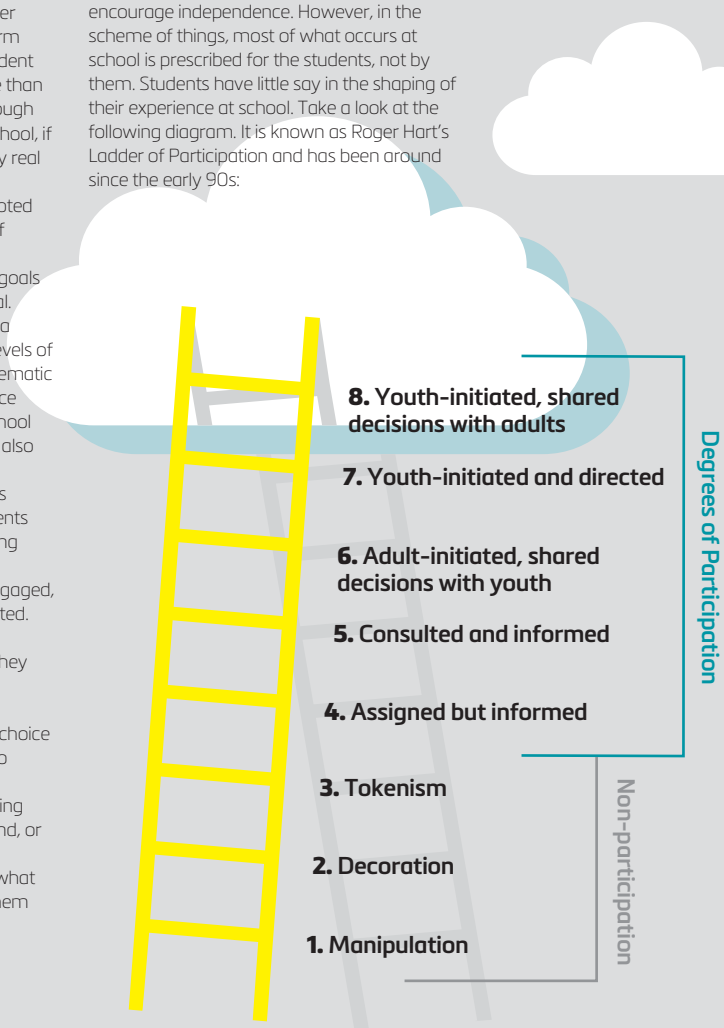
If our students are to be genuinely engaged, then they need to be intrinsically motivated. According to Ryan and Deci (2000), for individuals to be intrinsically motivated they need a sense of:

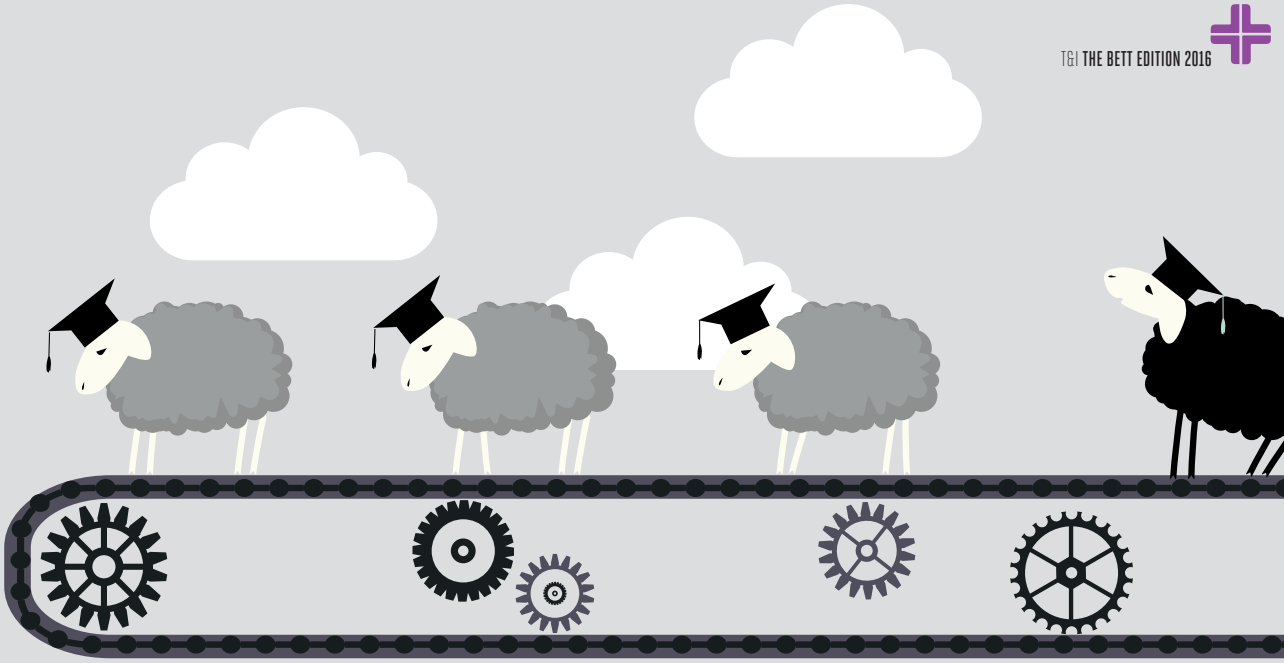
- autonomy – a sense that that have a choice in the what, why, when and how they do something;
- competence/mastery – they are striving to improve, not just going over old ground, or moving at too slow a pace; and
- belonging/purpose – The sense that what they are doing has a real relevance to them and the world around them.

Here's my two cents:

Autonomy

Schools go to great lengths to give students (and teachers) the impression that they encourage independence. However, in the scheme of things, most of what occurs at school is prescribed for the students, not by them. Students have little say in the shaping of their experience at school. Take a look at the following diagram. It is known as Roger Hart's Ladder of Participation and has been around since the early 90s:





Some schools, teachers or parents may look at the ladder and feel that it is simply not workable in a school environment. But I'd encourage you to think what aspects of your school could encourage more participation? It's clear to see that each rung of the ladder indicates a proportional level of autonomy. So why not start with something easy? For example:

- Students choose how to present their report. It could be in the form of a speech, Prezi, essay, website, Facebook page, poster etc.
- Students can collaborate with whomever they like. And I mean whomever. A cousin interstate, a parent, a professor they follow on Twitter. Why do we only allow kids to work with other kids in the same class?
- Survey students to find out what they want to know – in essence they help to design the curriculum.
- Allocate one lesson a week where students can pursue an interest independent of the school curriculum.

Competence/Mastery

The concept of Competence or Mastery is of utmost importance, yet I believe students have little understanding of what mastery actually is. Let me use an analogy. At his peak, Roger Federer was (and still is) the finest tennis player I have ever seen play. I realise for all you know he might be the only tennis player I've seen but the stats are compelling.

Between February 2004 and August 2008, he held the World Number One spot for a record 237 consecutive weeks. He was named Laureus World Sportsman of the Year for a record four consecutive years between 2005 and 2009. If anyone were entitled to feel they had mastered their craft it would be Roger Federer.

But has he mastered tennis? Has he ticked it off his list of things to do? Does he feel he has nothing else to learn from his coach? No. He continues to train every day. He attempts to refine his technique, improve his agility and increase his power. Despite all he has achieved in tennis, Roger Federer is still trying to improve every day.

Yet too many students equate an A grade with mastery. They have achieved all there is to achieve in this area of their education. There is no need to revisit it and they see no need to attempt to improve on it. By contrast, the student who receives an E grade has little belief or desire to improve. By placing grades on learning, we insinuate there is an end-point.

There is no end-point for Roger Federer.

As a consequence, we have too many kids in our schools who feel they either don't need to learn any more or they can't learn any more.

Purpose

Whilst having a sense of autonomy and mastery is crucial to creating genuine engagement, without a meaningful purpose then kids won't fully buy in. Think of this as the fourth R of education: Relevance.

All kinds of problems arise when kids realise that the only reason you're teaching something is because it will be on the test; or the only reason they are learning something is because the syllabus dictates they must. When a teacher's response to a student's question is or implies, "Don't worry about that, it's not in the exam..." then everyone should understand that there is an issue.

The compliant students get on with it anyway and we pat ourselves on the back for a job well done. But those students who are independent critical thinkers decide this holds no relevance for them and they disengage. In this sense disengagement should not be seen as a disciplinary or behavioural issue. We need to recognise it for what it is – a protest. Students are disengaging as way of a protest against what school is serving up to them. And to be honest, who can blame them? Maybe it's not the students who are the problem.

With all this in mind, the next time you use the word 'engaged' in a report, consider this: are you describing an engaged student or a compliant student? Whilst we're on the subject, how engaged are you in your work? What factors, if any, prevent genuine engagement in your workplace? And what can you do about it?

“I’d like to see all subjects offering equal quality”

T&I speaks to **Phil Bagge** about education past, present and future...

SPEAKER INTERVIEW

T&I: So, could you give us a quick overview of your day-to-day responsibilities?
PB: I work two days per week as a computing inspector and advisor in Hampshire, and teach three days a week at three different schools, teaching computing at primary level. I'm also a CAS master teacher and work quite closely with colleagues from University of Southampton to help develop computing in the region.

What has been your most inspiring teaching moment?
For me, it's been seeing the children move away from a certain degree of helplessness in their attitude towards computing. A couple of years ago, my students would be raising their hands every few minutes to say that they didn't understand, not making any effort to try and solve things themselves. Whereas now it's clear that they really engage with the subject and focus on problem solving independently.

What's the best excuse you've heard for missing homework?
As a computing teacher, I don't tend to issue much homework, but I find that so many of my students go home and continue to work on their projects out of choice.

I was teaching a class recently at Calmore Junior School in Southampton and after they returned from the half term break, I had a few students approach me and show me what they'd done over the break. I then asked my class how many of them had downloaded Scratch and worked on their own projects. 18 out of the 24 students in the class had done this without me even telling them where to find the program. It's great to see this level of engagement in technology.

How many times have you been to Bett and have there been any standout moments for you?
I've been to Bett almost every year, apart from last year unfortunately. I also spoke in the Bett Arena in 2013, which I really enjoyed. I find the best thing about Bett is planning the things that you really want to see beforehand. This means that when I get to the show, I'm able to go and find very specific technologies that particularly interest me and this makes it a very successful visit for me. I joined a Teach Meet one year too, which was really interesting!

What is your favourite part of your job?
I love teaching teachers and visiting schools and changing their perception of computing. Once teachers see the amount of thinking involved I find they buy in. Particularly with primary school teachers, I find they will buy into a particular piece of technology if they can see the benefits it can have on learning and attitudes towards learning. I also love hearing teachers say that they are enjoying programming; and it's something I hear a lot.

Who was your favourite teacher?
I had a fantastic history teacher, Mr Caldwell, who was a really influential figure in the school and made the lessons fun and enjoyable. I can remember coming home from school and making ancient scrolls out of tea-stained paper and writing stories on them. It's definitely instilled a real interest in the subject, which has stuck with me throughout the years; I still read and enjoy history books now.

What are you speaking about at Bett and why?
I will be talking about getting girls into computing; this is a key topic for me because I've noticed that there is a distinct difference in the ways in which girls and boys enjoy doing programming. Generally, I find girls see the computer as a tool to be able to do things, whereas boys see it much more as a toy and a gaming platform. This is something that is reflected in the way I teach computing; I teach a very wide genre of programming to appeal to all types of learners, from integration with maths, music, literacy and also gaming, which I think is really important.

What do you think have been the technologies with the most transformative effect on education?
I would have to say blogging. I've seen a real buy-in from my students when it comes to blogging, knowing that their posts can be shared beyond the classroom. I encourage classes to get involved with this whenever they can because giving a wider audience to your students' work provides much more value than just producing work for your teacher. It's rewarding to see children receive praise for their hard work from people who don't know them personally.

Where do you see education in the next five and then ten years?
I think the curriculum has narrowed significantly over the past 15 to 20 years with an increased focus on English and maths (in primary and secondary) which in some ways, has done our students a disservice. I'd like to see the education spectrum broaden out again over the next five to ten years, whether this is via specialist teaching or other methods. I see a really high quality of maths and literacy teaching but in other subjects, it's not the same. I'd like to see a reversal in this trend, with all subjects offering equal quality. For this to happen, Ofsted needs to consider the importance of all areas of the curriculum.

DON'T MISS THIS!
PHIL BAGGE

Creating the next generation of female programmers - Phil Bagge, Educator

Session: Saturday 11.20, Bett Arena, 11:20, Saturday 23 January

Q&A

eyeTeach

BETT STAND NUMBER: A170

Trevor Wallace, MD of Metro Security, talks about the company's innovative eyeTeach system and its protection solutions for the education sector...

VISIT: WWW.EYETEACH.NET & WWW.METROSECURITY.CO.UK CALL: 0843 382 4999
EMAIL: INFO@EYETEACH.NET; INFO@METROSECURITY.CO.UK

T&I: Why do you think eyeTeach attracted so much attention in 2015?
TW: eyeTeach is an innovative, multi-use audio and visual teaching aid for schools, colleges, academies and universities. eyeTeach allows teachers to see themselves in the classroom environment and review both their own performance and that of their students. eyeTeach can additionally be used, for instance, in class presentations, one-to-one student reviews, as a website resource, and for in-house training purposes.

How does the system work, and why is it different from other solutions on the market?
eyeTeach makes use of Metro Security's fire safety and site security expertise, including CCTV surveillance. eyeTeach deploys sophisticated Megapixel cameras, along with high-definition audio recording devices. Importantly, built-in safeguards ensure teachers retain full control over the recordings – personalised PIN numbers link each teacher with specific recordings. eyeTeach additionally includes a simple push-button device to 'mark' significant points during any lesson, which the teacher can later use for quick and easy review.

How are schools using eyeTeach to improve teaching and learning?
We successfully trialed eyeTeach at Cumberland school in Newham, east London, after the school asked us to design a bespoke system that matched its teachers' needs, as Christina Raines, Cumberland school's Deputy Head Y10 explains: "We realised that an audio/video teacher and pupil self-reflection system would be the most effective, and cost-efficient, way to improve Cumberland School's learning processes. eyeTeach provides the ability to see myself and how I am teaching; I can hear how I am sounding to my pupils, view my body language and monitor the whole classroom for every pupil's reaction. "Additionally, the versatility and quality of the system allows me to show pupils' reactions, demonstrate where they may be going wrong during a presentation, or show a class an example of a pupil's excellent oral exam."

POPULAR ON TEACHWIRE.NET

A brand new website from the publishers of Teach Secondary

The internet offers plenty of superb teaching materials and CPD resources for teachers – but combing through countless pages to find relevant and useful material for your specific needs can be a time-consuming process. Or at least, that used to be the case.

Teachwire is a brand new, free website for educators that spans early years to KS4. It pulls together the latest news, resources, products and comment from the world of education, and presents it to you according to what you want to see.

It's also the perfect place for you to pick up planning inspiration, and share ideas and resources that have worked for you with your peers. Uploading is simple and fast, and the Teachwire archives are already crammed with original resources that can be filtered according to subject, Key Stage or both. Want to find out more?

Here are just a few of the stories that are currently causing a buzz at Teachwire – why not take a look for yourself, at teachwire.net, and see what the site can offer you?

■ PARLEZ VOUS 01100011?

If we're going to insist that every student take a modern foreign language for GCSE... perhaps we should be focusing on Python and Javascript instead of French and Spanish, suggests Mark Armstrong. You may or may not agree with him, but you can read his argument at **ow.ly/VQIxG**

■ LET'S WORK TOGETHER

Working collaboratively is definitely the future of education – but what happens when you want to share resources and swap ideas with colleagues across several continents? Luckily, there are tools out there to make this kind of cooperation a breeze... and many of them won't cost you a penny! Get the details at **ow.ly/VQJjX**

■ SEXTS, LIES AND CYBERBULLYING

Get young people talking about and understanding the seriousness of online abuse with these five, highly credible sources of guidance, support and ideas: **ow.ly/VQI7O**

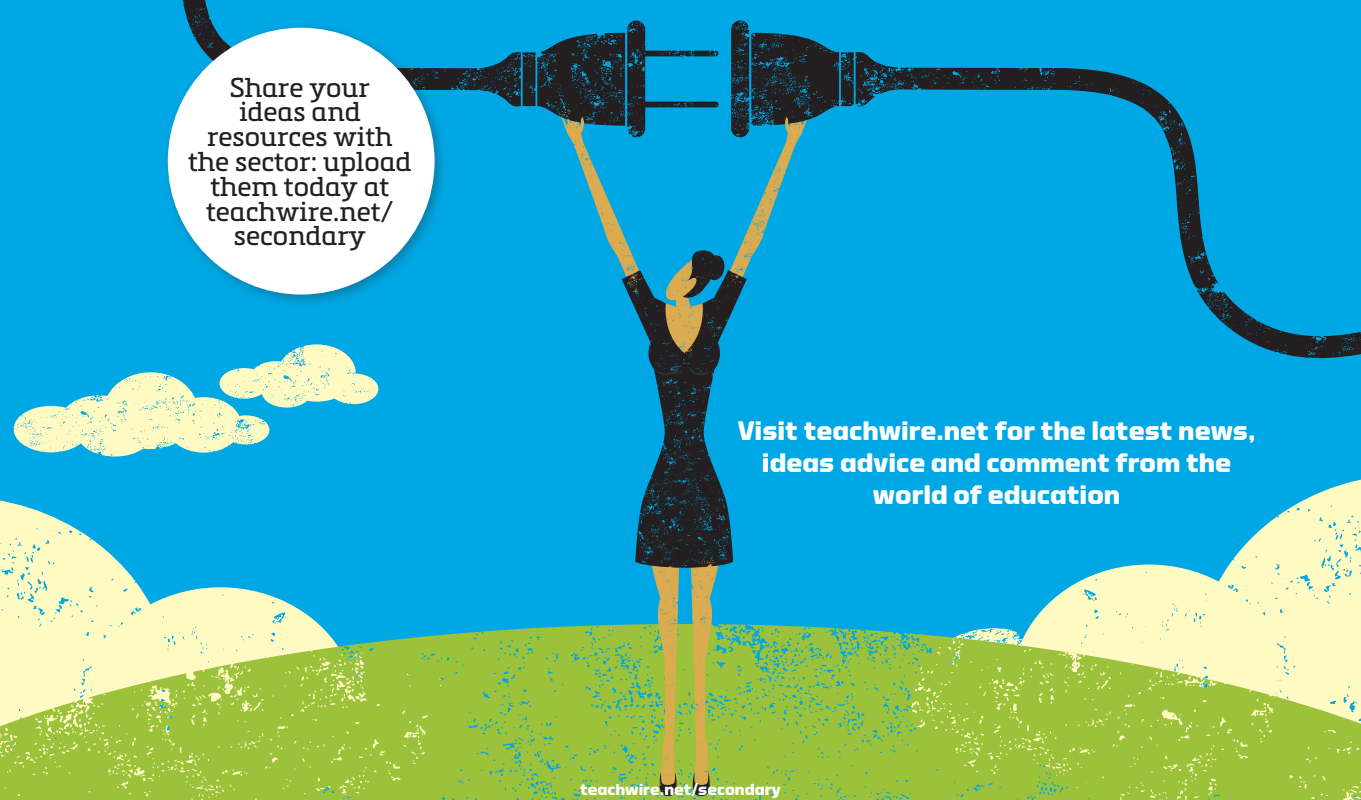
■ FIRST PRINCIPLES

It's in danger of being squeezed out as Nicky Morgan and her team push an Ebacc-based curriculum – but here, Richard Green, chief executive at the Design and Technology Association gives five powerful reasons why schools – and indeed, education ministers – neglect D&T at their peril. Find out more at **ow.ly/VQIVH**

■ ESAFETY FIRST

Kat Howard, senior educational consultant and online safety lead at RM Education, looks at the five key areas schools should consider when formulating their internet safety policies: **ow.ly/VQHBL**

Share your ideas and resources with the sector: upload them today at teachwire.net/secondary



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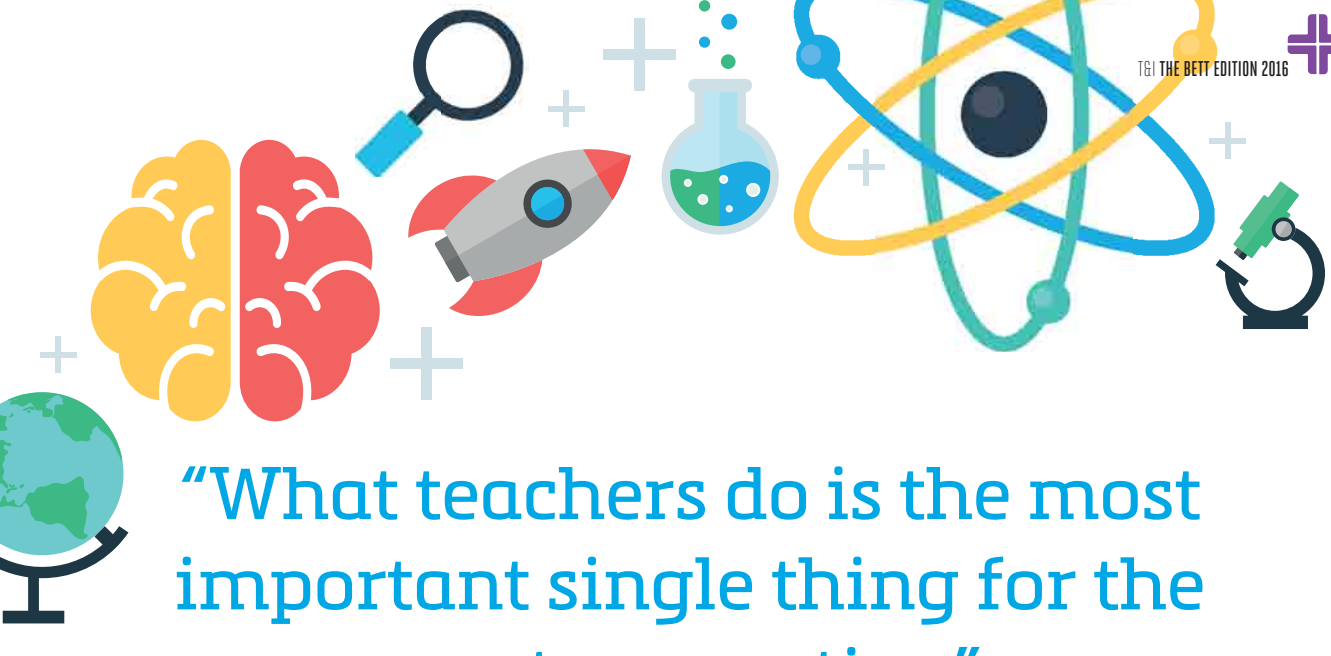

"What teachers do is the most important single thing for the next generation"

Robert Winston is coming to Bett this year – T&I spoke to him to get an idea of what visitors can expect...

T&I: Were you encouraged to study STEM subjects from an early age?

RW: No, I wasn't, particularly. I was educated in the 50s and I was interested in science as a child, but I don't think I was encouraged to do any specific subject over another. My mother thought I might be a diplomat, actually, because I was interested in languages. But although I really wanted to read English at university, and for a while toyed with the idea of doing something in the humanities, I took science related subjects at A level with thoughts of reading chemistry, before applying to do natural sciences and getting a place. After realising that I didn't really want to be looking down a microscope for the rest of my life, I ended up trying to do something which I thought would be integrating with people, and I applied for medicine and did that instead. And the irony of course is that I ended up looking down a microscope for the rest of my life anyway.

Do you think a greater emphasis on STEM subjects in primary schools might help us address the relatively poor take-up of these subjects at KS5 and beyond?

I think now there's increasing evidence that there's much more interest in STEM, in fact. The difficulty in primary schools is that we don't have good educational evidence that teaching science at an early age ends up with more people studying it later. That's just not available. What we do know is that very few school teachers have any serious scientific background. For example, most teachers in primary school haven't even got an A Level in the subject – and that probably is a problem, because it means they haven't had a truly rounded education. I think the issue therefore is that there is a tendency towards a lack of science literacy, which should be corrected, regardless of what happens later.

What message do you hope to get across to Bett delegates ths year?

The general message I would like to get across to educators is never be put off by the fact that you are frequently and massively undervalued. What teachers do is the most important single thing for the next generation, which of course implies the welfare and future health of our society. In my view teaching should be put on a much higher level.

How important a role do you think technology has to play in education?

Well the primary aim of education must be to learn to communicate, which doesn't require a computer or a keyboard or a telephone; it requires the ability to act as a human being, doesn't it?

Of course, technology in teaching is useful. But the idea that people like myself are not properly educated because we didn't have access to a computer is complete nonsense; it's obviously untrue. Technology is an adjunct to education, it's not an excuse or a substitute for it. So I think that really, it's the human values of teaching and the basic ability to communicate in whatever way is natural to that individual, that are important. Technology is an extra, which is extraordinarily useful. But it's not necessarily vital.

DON'T MISS THIS!

ROBERT WINSTON

Science and children – Robert Winston, Researcher, Doctor, Broadcaster, Professor of Science and Society, Imperial College London

Bett Arena, 17:00, Wednesday January 20

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The brand new Indigo range from LapSafe® has been designed to address the issue of classroom space and storage, and is one of the most universal space saving designs available in the marketplace today.

Indigo is a high quality and desirable range of wall, desk and mobile carts suitable for tablets, Chromebooks and hybrid devices designed to offer compact storage, charging and charge and sync solutions: ideal where space is a premium. A total of nine products will be available across the range, which has been designed to be space saving and incorporates innovative charging technology and constructed using tactile materials:

Indigo Wall is inherently strong by design, secure, aesthetically pleasing and is only 21cm thin. This slim wall unit is able to accept up to 16 devices fitted with a ruggedised case whilst maintaining its small footprint. Inside, its unique module design is the secret to keeping the wall unit small and the high grade aluminium shutter doors keeps the devices safe and secure.

Indigo Desk is a really neat desktop station with an optimised footprint and robust design. With no doors opening outwards onto the desk, the high grade aluminium shutter doors minimise the working desk area, while keeping up to twelve devices safe and secure.

Indigo Cart available for 16 or 32 devices offers great flexibility, mobility and functionality. With a complete "back to the drawing board' design, the LapSafe® development team have not disappointed with their attention to detail. Aluminium shutter doors offer security, curved and softened edges offer safety and a new patented aluminium storage modules

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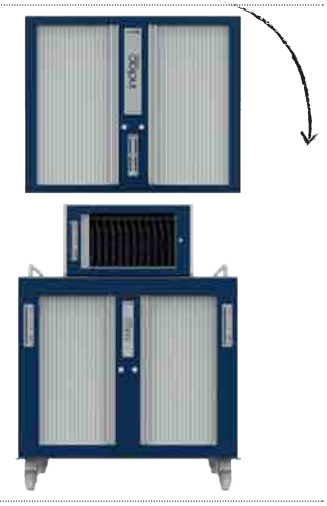
Mark Exley – Business development Director for LapSafe® Products.



provide strong yet lightweight and cushioned compartments to fit devices.

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"The iPad's ubiquity makes it a great device for students"

T&I speaks to **Mike Guerena** about digital balance

SPEAKER INTERVIEW

T&I: What are your day-to-day professional responsibilities?
MG: I am director of educational technology for Encinitas Union School District in California. My main responsibility is to ensure that all students and teachers have access to digital technology that enhances the learning and environment seamlessly. To do this I provide professional learning opportunities for teachers, lead groups of educators to curate digital curriculum for students and I also act as a coach for my staff to support the teachers in the district to implement a student centered learning environment.

What are you speaking about at Bett and why?
I am speaking at Bett on the topic of finding balance in how we use digital technologies in schools. There are a lot of conflicting points of view about the benefits and perils of using digital technologies. These include concerns about the amount of screen time that students are faced with on a daily basis, reading in digital vs paper formats and equity of access. I will be addressing these topics with research, anecdotal examples and survey data from parents and students.

What is your favourite part of your job?
The fact that I have direct influence on transforming classrooms into student centred learning environments.

What is your favourite bit of classroom technology?
I think the iPad's ubiquity makes it a great device for students. The touch screen really makes a difference for students in interacting directly with the device. Having a usable camera also provides student with the ability to create videos seamlessly.

What is the best excuse you've ever heard from a student for not doing his or her homework?
"I ran out of power."

What started your interest in edtech / technology?
Getting an Atari 2600 game system when I was ten years old.

Who was your favourite teacher and why?
A history teacher, who had us question where the source of history came from and if it was shaped by a specific point of view.

Are you using any particular technology at the moment?
My iPhone 6 plus has greatly reduced my usage of my laptop and iPad. The screen is large enough that I can do most things I need to on it.

Where do you think education should be in ten years' time?
I hope that we will have teachers that were part of the new learning environments that we are creating. This will be the first group that was not taught completely in a predominately traditional stand and deliver format. They will help solidify a student centred learning approach that focuses on the both the required learning and the desired learning of students.

> "There are a lot of conflicting points of view about digital technologies"

DON'T MISS THIS!

MIKE GUERENA

Are We Over Digitising Education? – Mike Guerena, director, educational technology, Encinitas Union School District

Learn Live: Secondary, 13:30, Wednesday 20 January


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READY TO GO

At ACS Hillingdon International School, students are being prepared for a digital future, as **Marc Smith,** IT integrationist, explains...

As digital natives, born in the age of the internet and online technology, today's young people possess valuable skills that will contribute to the future wealth of our society. However, their education still needs to hone their digital skills to help them realise their full potential, not only at higher education level but also in the world of work.

By embedding mobile technology into the fabric of our curriculum at ACS Hillingdon International School, we aim to prepare young people for the future by ensuring that they use and develop their skills creatively, practically and responsibly.

Mobile technology in the classroom

Increasingly, teachers, educators and IT practitioners are realising the benefits of effectively including mobile technology in classroom lessons, both in the short term to stimulate student engagement, and longer term to assess learning techniques. In fact, mobile technology can provide a personalised and differentiated learning environment for each student.

By introducing a one-to-one iPad programme, our students became more engaged and active participants in their learning; researching, recording and creating media-rich projects. Teachers can also create unique, curriculum specific resources for pupils, catering for all different types of learners. For example, a reluctant reader may be more motivated to explore a novel if they can invent and create a particular setting using an application such as iMovie or Explain Everything Book Creator, rather than by producing a 2D drawing.

By embracing technology, we empower our students to engage with a world of knowledge at their fingertips. We have a room equipped as a working film studio, including front and back cameras and two large, wall-mounted LCD screens, allowing classes to connect to the wider world as a group and in real time. Leveraging the power of mobile technology, students in our Middle School recently participated in a live exchange with classes in the U.S.A to discuss films they watched together.

The 100 iPad Wall

We encourage our students to interact and embrace digital technology in many different and creative ways. ACS Hillingdon's Advanced Technology Club, for example, comprises a group of High School students who meet once a week to develop innovative technology projects. Last year they took on the highly ambitious project of creating the world's largest iPad Wall – using 100 iPads to create a giant screen, capable of streaming images in real time.

As part of the project students enhanced their technology skills, writing the code behind the iPad Wall and designing its unique structure. The Club encourages young people to develop and hone their digital skills in a practical and enjoyable way, and our aim is that they finish school with advanced digitals skills, which will in turn enhance their employability.

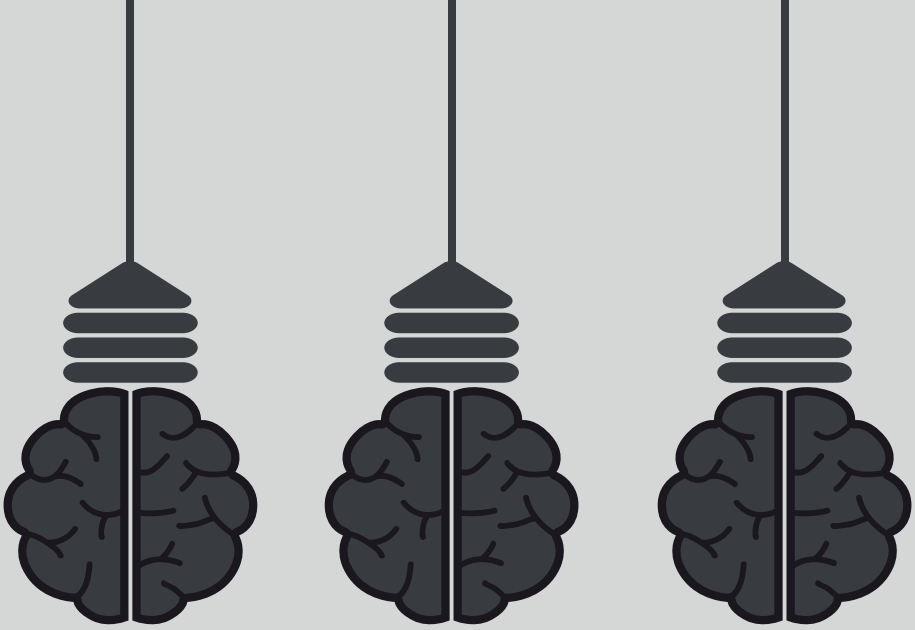
Marc Smith is IT integrationist at ACS Hillingdon International School

Developing the four 'C' skills

The Advanced Technology Club was invited to showcase students' achievements by installing a modified version of the iPad Wall using 48 tablets to over 2,000 international delegates at the Apple Leadership Summit in London. Lower and Middle School students also joined the presenting team using technology to create a piece of real-time art.

Students collected over 700 photos of the school environment shot using a microscopic lens attached to their iPads and the photos were then streamed on the iPad wall during the Summit. Students, some as young as six years old, using their iPads as part of this project, enhanced all four of the crucial 'C' skills – collaboration, communication, critical thinking and creativity.

By truly integrating technology into the curriculum, today's iGeneration develop instinctive and advanced digital skills, enhancing the learning experience and preparing them for the rapidly evolving digital world.



NO LIMITS

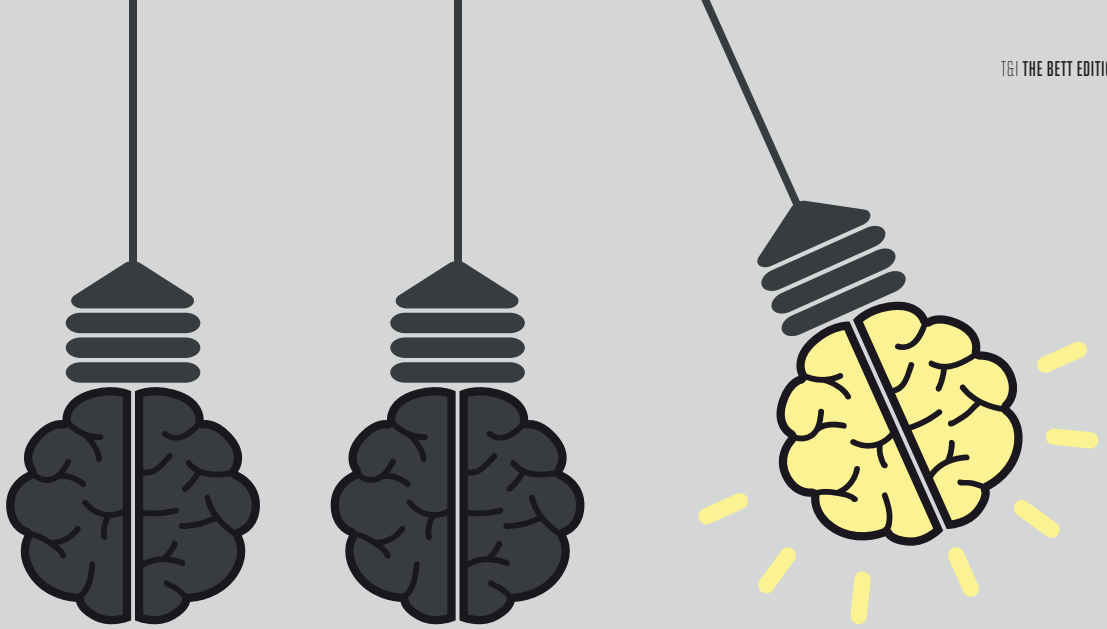
Real mathematics is about creativity and depth, not speed and memory, argues Jo Boaler – and everyone can learn it...

All children are different in their thinking, strength and interests. But many mathematics classes value one type of maths learner above all others: one who can memorise well and calculate quickly. This has caused millions of students in the UK and other parts of the world, with considerable mathematics potential, to turn away from the subject. This tragic situation has been prompted by faulty government policies that force students to memorise mathematics rather than think deeply about the subject. Governments, schools and classrooms have worked together to turn a conceptual subject of linked ideas into lists of rules and formulae to be remembered. In doing so they have diminished the subject and prompted record levels of maths anxiety and disinterest, turning schoolchildren away from the subject in droves.

Widespread innumeracy and dislike of mathematics across the UK, coupled with stunning new evidence from brain science, should be cause for a revolution in the ways mathematics is taught and learned (youcubed.org). But recent evidence from a different source makes the need for change even more compelling. PISA tests and surveys are given to millions of students worldwide every three years. Pablo Zoido, a PISA analyst, and I analysed the 2012 data set including 15 million students from 65 countries and regions, examining the mathematics strategies students used. This showed something very interesting, for the world in general, and the UK in particular. The data showed that the lowest achieving students in the world were those who used a memorisation strategy in mathematics. They were the students who approached maths as a set of methods to remember and who tried to memorise steps in order to be successful. The highest achieving students were those who thought of maths as a set of connected, big ideas. The PISA results also revealed that the UK is one of the five countries at the top of the list of memorisers of all 65 countries and regions assessed in PISA.

False assumptions

The high number of memorisers in the UK is perhaps not surprisingly as many maths teachers, driven by government policies, have encouraged memorisation over understanding. Primary schools of recent years have become centres of times table memorisation and test preparation. Secondary schools primarily use a 'demonstration and practice' model, showing students methods and then requiring that they practise them over and over in their books. These teaching methods communicate to students that memorisation is an important strategy in mathematics. Students come to believe that what is important in mathematics is fast recall of methods and procedures and only students who are attracted to memorisation and recall are encouraged to succeed. Students who think deeply and creatively come to believe that they do not have a future in mathematics. This has serious repercussions for students at all levels of mathematics. This situation is particularly ironic as brain science tells us that the students who are better memorisers do not have more maths 'ability' or potential, but we continue to value the faster memorisers over those who think slowly, deeply and



creatively – the students we need for our scientific and technological future.

Mathematics is a broad and multidimensional subject. Real mathematics is about inquiry, communication, connections, and visual ideas. We don't need students to calculate quickly in maths. We need students who can ask good questions, map out pathways, reason about complex solutions, set up models and communicate in different forms. When maths is presented as an open and creative subject, students achieve at higher levels, even on standardised tests, and continue with mathematics into their lives. To see students engaged in these ways in mathematics classrooms, visit **www.youtube.com/watch?v=aDTUb6UWZYs**

Mathematics is not a subject that requires fast thinking. Award winning mathematicians talk about their slow, deep thinking in maths. Fields Medal winning mathematician Laurent Schwartz wrote in his autobiography that he felt stupid in school because he was one of the slowest thinkers in maths. Eventually he realised that speed was not important – "What is important is to deeply understand things and their relations to each other. This is where intelligence lies. The fact of being quick or slow isn't really relevant".

Spread the word

Equally important, new brain science tells us that no one is born with a maths gift or a maths brain and that all students can achieve in maths with the right teaching and messages. The classrooms that produce high achieving students are those in which students work on deep, rich mathematics through tasks that they can take to any level they want. No one is told what level they can reach and no one is held back by narrow questions that limit students' mathematical development and creativity.

Many people across the UK have gross misconceptions about mathematics learning, thinking that mathematics is a narrow subject of memorisation and speed and that people who do not calculate fast or memorise well are not 'maths people'. It is not only mathematics educators and learning scientists who are working to change these ideas. Leading mathematicians such as Steven Strogatz and Keith Devlin, as well as technology leaders such as Conrad Wolfram are all publically arguing that calculation is not maths, and that maths is a much broader and richer subject. We need to change the conversations about mathematics, communicating to all children that they can learn.

We also need to change the way maths is taught, valuing the different ways of thinking that are so important to the subject. Mathematics, itself, needs this and although change is hard, it should be embraced. For when we broaden mathematics and open the doors of mathematics to all students we will see an important change. No longer will maths classrooms be silent rooms, filled with disaffected students; instead they will be vibrant spaces, filled with confident young people equipped to think quantitatively and creatively about our ever-changing world. This is a change that is urgently needed by the UK, and by the world.

DON'T MISS THIS!!

JO BOALER

The Mathematics Revolution: Changing Students' and Teachers' Lives with Brain Science & Connectivity - Jo Boaler, professor of mathematics education at Stanford University

The Bett Arena, 13:30, Thursday January 21

“I’ll never let go of my clicker!”

T&I speaks to **Jennifer Hart** about flipped learning

"It's great to see how technology is being used in the classroom and across different schools..."

SPEAKER INTERVIEW

T&I: What are your day-to-day professional responsibilities?
JH: I'm a chemistry teacher and a member of the school's SLT. I am responsible for the science faculty, CPD and teaching and learning.

What are you speaking about at Bett and why?
A year ago we introduced iPads to our sixth form students and we have had to develop new ways of teaching as a result. I've also had to work with staff of varying abilities to ensure they are fully trained and confident using the technology – this is still a work in progress. I'm talking about what we have done and how it has changed existing practice. I'm also going to talk about where we are going next with the technology.

What is your favourite part of your job?
Delivering a lesson that I've planned well. There is nothing more satisfying than when it all comes together in class.

What is your favourite bit of classroom technology?
My teacher's aid, the clicker. It's not very fancy but it allows me freedom to roam around the classroom without being tethered to the whiteboard / computer. Although I now reflect my iPad more to get the same effect, I'll never let go of my clicker!

What is the best excuse you've ever heard from a student for not doing their homework?
Disappointingly, the students are rarely inventive with their excuses. I usually just get 'I forgot'; perhaps if they were more creative I would let them get away with it more!

What started your interest in edtech / technology?
My general interest in technology stems from my dad. I used to help him build computers and would fall asleep to the sounds of dial up internet as a child. My interest in technology in education began when I was an NQT and was the first teacher in the school to be given an interactive whiteboard.

Who was your favourite teacher and why?
Mr Davis – my science teacher. It's because of him I chose A Level Chemistry and am now teaching the subject. He was incredibly engaging and really brought the subject to life. I also had a secret crush on him!

Have you attended Bett before? If so, what was your standout experience?
Yes. For me it's the talks, seminars and the TeachMeet following. It's great to see how technology is being used in the classroom across different schools. I always come away excited to develop my own practice.

Are you using any particular technology at the moment?
As I mentioned earlier, we have just introduced one to one iPads into our sixth form – I am really focusing on how I can develop the use of these so as to make it effective.

Where do you think education should be in ten years' time?
Still improving. Education changes so rapidly, which sometimes causes a lot of issues and anxiety for teachers; however, I do like the fact that education is continually evolving.

DON'T MISS THIS! JENNIFER HART

Flipping the learning, classroom and role - Jennifer Hart, assistant head, Ashmole Academy

Learn Live: Secondary, 16:30, Friday 22 January

THE HUMAN TOUCH

Technology is a wonderful thing, says Dr Nicola Davies – but virtually nothing comes close to the lasting impact of an inspirational teacher...

After watching some TEDTalks on inspiring teachers, I decided to share a link on Facebook, along with the following message: "Janet Florey and John Barter believed in me and helped me find my wings. Education became my sanctuary and remains a joy rather than a chore. I can never thank them enough. Good teachers who inspire are a gift."

This message was to teachers whom I haven't physically seen for over 15 years – and yet here I was feeling compelled to show my appreciation of the impact they had (and were still having) on my life.

Ironically, this got me doing some of what these individuals taught me to do best – think. I started to think about the importance of face-to-face interaction in the classroom and the implications of this one day be replaced by 'virtual classrooms.' Indeed, online courses and video conferencing are slowly decreasing the demand for face-to-face education. I suddenly had an overwhelming concern that this very piece of equipment I had used to reach out to my teachers could actually be the downfall of the profession as we know it.

Contact support

School was far from a breeze for me. While I was a dedicated learner, I was socially awkward and actually found face-to-face interaction hard. So, I was surprised to find myself so concerned about the loss of human contact within the classroom. However, despite any problems I had at school, the inescapable and often comforting constant was a teacher guiding my education and attempting to pass on knowledge in what was, I now realise, a very short space of time.

As technology enables our everyday lives to require less interaction with other humans, I think about the disadvantages that an automated life would bring. Don't get me wrong; I love my privacy and uninterrupted time, especially snuggled up with a good book to immerse myself in – but if I didn't have real, physical people around – to be inspired by and to learn from, I'd be in virtual hell – literally.

On the other hand, I ask myself, what would I be doing right now if technology didn't make our lives better? Instead of sitting comfortably in an ergonomically designed office chair, typing on the computer that either corrects my mistakes automatically or boldly underlines them so that I can, I'd be in a hard wood chair, dipping my quill into an ink jar and hand writing these words one by one.

Mixed blessings

There is no doubting the advantages that technical advancements inevitably bring. Who isn't grateful for washing machines, the lightbulb, hot water, the ability to send a letter anywhere in the world within a few seconds? I, like many others, love so many aspects of how the world has changed since I was in school. But, no physical teachers? No classroom of friends? No one to talk to? No one to see the look of frustration on my face, walk over to my desk and spin my ponytail in order to get my brain to work harder on a maths problem (yes, this did actually happen)?

The highlighted memories of my schooling more often than not involve teachers – teachers who were passionate about their subject and passing their knowledge onto the young people before them; teachers who genuinely cared about the long-term future of their students. In this sense, teachers aren't just educators; they are an intricate and crucial part of the emotional, social and intellectual development of every child they teach.

Technology will continue to provide a myriad of advantages as the next generation becomes the leaders of society. I would find it sad to live in a world where those leaders are schooled in a virtual world without a teacher to ensure they were 'getting it.' Humans are meant to co-exist, to communicate, to have face-to-face contact with each other. Teachers will always be needed. They can never, and should never, be replaced – not even by the wonders of technology.

ABOUT THE AUTHOR

Nicola Davies is a psychologist and freelance writer with a passion for education. You can follow her on Twitter (@healthpsychuk).

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