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# An airborne adventure

Help students develop key STEM skills as they design and make a 3D printed micro drone...

Airgineers is a STEM challenge for secondary school aged students, which is focused on using digital tools to design and make a micro drone that is 3D printed. This miniature flying machine has a small camera mounted on it, which transmits a live on-board video feed to a display in goggles worn by the pilot, who will feel like they are sat in the drone that they are flying.

Airgineers was created by Rapid Education to provide a project that teaches all the skills that are needed to design 3D CAD models that are ideal for 3D printing. When designing the frame of a micro drone, students will learn the fundamental toolsets needed with 3D packages. Once these have been mastered, some of the more advanced tools can be used to examine the strength of the designs by using the software to calculate the weight or by performing simulated stress analysis to identify weak points and areas for improvement. By becoming confident with these digital tools, students then have a real opportunity to be creative and the true potential of Airgineers is realised through a 'design-thinking' mindset.

### **Complete kit**

Airgineers provides a complete kit that contains all the electronic parts, motors and batteries needed to make and control a micro drone. The only thing that is not included in the kits is the





frame, which the students are required to design and manufacture themselves. For this, Airgineers has worked closely with Autodesk to provide video tutorials which can be used by both teachers and students to learn how to use Fusion 360 or TinkerCAD to design a drone frame. Once you have worked through the tutorials, you'll have all the skills you need to design your own from scratch.

As well as providing the tutorials, all Autodesk software is completely free for use by schools, educators and students, so you can access industry-leading software without any cost at all.

When it comes to 3D printing, speed is often an issue, especially when trying to manufacture the designs produced by a whole class. Airgineers set out to create a project where most designs could be 3D printed in less than two hours, which maximises the amount of prints you can make in the time available to you. Even with raft materials, this means the cost of making each frame is unlikely to be any more than about 25p.

### **Iterative design**

Design should be an iterative process which lets students discover the flaws in their creations and make improvements as they progress through the project. This methodology is used in so many areas of design whether it be software, electronics, product design or fashion. The ability to use rapid prototyping methods such as 3D printing makes it quick and easy to test a design or even just part of



a design before making some tweaks and trying again. Students can start by printing small parts of the frame to learn about tolerances and material properties such as shrinkage. It's also a good opportunity to find the limits of your 3D printer. For example, what is the smallest wall thickness it can reliably print? What angle overhangs can be produced without using any support material?

But it's not just 3D printing that can be used to manufacture a micro drone frame. Students could also explore laser cutting or CNC machining of materials like HDPE or polystyrene foams such as Depron as part of the design process.

### **Get competitive**

Micro drones are small enough to be flown in classrooms and school halls so you can test your creations and practice flying almost anywhere. Students can then test their piloting skills and drone designs against other schools from all over the country by taking part in the Airgineers competition where they will compete in head-to-head races and team games like Capture the Flag.

Regional events take place throughout the year – to find your nearest event, visit www.airgineers.co.uk

For further information, visit www.airgineers.co.uk and follow @airgineers



# Unlock the learning potential of the iPad

With Padcaster, students can become content creators, rather than consumers...

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- + Livestream school sports activities, presentations and events
- + Explore the next generation of digital hands-on learning

Most schools, colleges and universities throughout the world own or have access to iPads.The Padcaster has been designed to help these institutions make the most of their devices.

The basic Padcaster set-up (RRP £359.12 excluding VAT) consists of iPad frame system, wide-angle lens, shotgun style microphone and headphone/microphones splitter cable. This solution enhances the visual and audio quality from the iPad and can be used by any iPad-user to create professional video.

### Going further...

Depending on what the user wishes to achieve from their iPad recordings, the



Padcaster can be taken a step further when purchased as the 'Ultimate Studio' bundle (RRP £1,142.09 excluding VAT). In addition to the base setup, this kit adds a fluid-head tripod, pop-up green screen, stick and lav microphone with clamp-system, LED light, mini teleprompter (compatible with any smart phone or small tablet) and padded backpack to securely transport and store this entire solution within.

Padcaster continues to expand its presence in the UK and European market and has consistently been improved and updated to keep up with the latest iPad models from Apple. This has been proven with the newest model from Padcaster known as the 'Verse'; this yet to be released product has been designed as a universal solution for pupils and students, budding journalists, and anyone using a smartphone to capture exceptional video whilst on the go.

### **Easy and inclusive**

When it comes to usability Padcaster has been designed with the pupil or student and general education sector in mind. Many of the fittings are universal, so are compatible with other accessories with the same fittings, e.g. tripods and microphones. Recording, editing and teleprompting software apps are in no way restricted with the Padcaster, leaving you free to work with the software packages you prefer to create effective content.

To date Padcaster has been used within a huge variety of activities – some examples include allowing less physically abled students to participate in sports day activities, by becoming the appointed film makers; creating effective live streaming of school events or field trips replacing the need for heavy expensive kit; or simply to



### **Quality and durability**

The Padcaster requires basic assembly to fit the components together. All recording accessories like LED lights and microphones use universal 'cold shoe' adapters, which are included, to simply attach onto the Padcaster frame.

### **Training and support**

There is a library of tutorial videos and filming tips available on the Padcaster YouTube channel and website, as well as a free technical support helpline based here in the UK.

### Simplicity for the classroom

The beauty of the Padcaster is its high-quality build combined with the simplicity that makes it easy to use, especially within the classroom environment. Padcaster is so confident with the build quality of its products that they come with a lifetime guarantee, too.



Padcaster is available exclusively throughout the UK and Europe from Douglas Stewart EDU. Contact the team for more information or to place an order: Email **helpteam@dstewart.eu** Call **01252 619 829** 



### FROM THE EDITOR

### 🕂 Welcome, once again...



... to this September issue of *Technology & Innovation* magazine; a comprehensive overview of the very latest edtech developments that ould be making a positive difference to teaching and learning in your school, soon.

As usual, we've kept the focus tightly on products, resources and ideas with proven impact, and/or evidence based potential; we know that teachers aren't interested in fads and gimmicks, so neither are we. If it's

not going to reduce your workload, or support your students towards greater success (or both), then it has no place in your classroom – and it doesn't belong on our pages, either.

And this brings me to the occasionally controversial issue of the F-word. Yes, I'm talking about *fun*. There's no denying that technology can make lessons more exciting and enjoyable for young people; and few would argue against the idea that happy, enthusiastic students are likely to be more receptive to learning than bored, disengaged ones. However, as Chris Burgess points out in his insightful piece on page 32, engagement alone is not enough to guarantee progress. If pupils are more interested in a flashy gadget than the topic it is being used to help explain, or more concerned about gaining digital 'rewards' than increasing their understanding, then it does become quite tricky to justify the educational value of the tech investment in question.

Of course, this doesn't mean that there's no 'educational value' in fun itself, nor that using technology as a tool to inspire enthrallment in learners is automatically a bad thing – however, as always in this profession, it's a question of balance. Damian Hinds' recent call for "a strong partnership between government, technology innovators and the education sector" in order to spark an "educational revolution" met with mixed reactions from stakeholders; but the truth is, the revolution has already started in schools all over the country, where edtech is being used in thoughtful, creative and practical ways not to impress observers, but to improve outcomes – see pages 80-81 for just one example of many we have to share with you.

We've gathered together a wide range of voices to fill this issue of *Technology* & *Innovation* – from Sir Anthony Seldon discussing the potential impact of AI on our education system (p.10), to Dr Christian Jesson's advice on how to avoid cyberbullying before it starts (p.62). We've asked industry experts to explain the thinking behind their innovations, and we've spoken to classroom practitioners to find out what they really want from industry experts. We hope you'll find plenty to intrigue you, to spark debate, and to help you in your drive to become the best educator you can be... because ultimately we know that, regardless of the tools at your disposal, it's you, the teacher, who will make the real difference.

Here's to a fantastic year ahead!

Hel<mark>en Mulley edit</mark>or@teachsecondary.com

# Essential reading:



"Engagement is not enough" Take an integrated approach to STEM

### Who's on board this issue?



Chris Hillidge is director of STEM and specialist leader of education for Beamont Collegiate Academy, Warrington.



Vanessa Bonthuys is responsible for Computing at Simon Langton Girls' Grammar School in Canterbury.





Dr Christian Jessen

is a doctor,

Stephen Woollard is a teacher at Harrogate Grammar School.







Rachel Whitfield is a Google Certified Teacher, and author.

Nina lles is head of EdTech at BESA.

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Published by: Maze Media (2000) Ltd, 25 Phoenix Court, Hawkins Rd, Colchester, Essex, CO2 8JY. Tel: 01206 505900

# Looking for something to provide your students with a fresh and engaging way to support their maths learning?



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# What Secondary teachers are saying about Mathletics...

"Out of all the products that I have seen that are online based, it works the best." Head of Maths. London

"I'd absolutely recommend Mathletics. It creates a real buzz for the teacher and students and brings life to the job we are trying to do. It's so nice to see the students so engaged and so enthused, without having to really push and force them to do some extra maths."

### Head of Maths, Hertfordshire

"For me as a Head it's great to see staff using resources that have an impact on children's lives, helping them achieve. For us, Mathletics in mathematics has been that resource, so it's been fantastic!" Executive Principal, Bushey Meads school



Visit uk.mathletics.com/secondary to hear Secondary teachers discuss how Mathletics has instilled a passion for maths in their schools, with students now massively engaged and doing lots of independent work!

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# "Access points must be properly planned..."

Cris Francis, head of commercial sales at Jacksons Fencing, advises on the importance of choosing the right gates for your school



# T&I Why is it so important to specify the right gates for schools?

**CF** Schools typically experience heavy pedestrian and vehicular traffic at peaks times of the day such as immediately before and after school hours. Ensuring that access points are properly planned, installed and maintained plays a vital part in keeping people safe, avoiding accidents and reducing the risk of criminal damage.

# What advice do you have for pedestrian gates?

All pedestrian gates should be fitted with locks that match the look of the fence. Additional secondary entrances should only be available at peak times and the gates locked during school hours to prevent unauthorised entry or exit from the school premises. When the school is closed, all entrance gates of the site must be locked.

### What is the best practice for controlling vehicular access to schools?

Vehicles should be limited to one main area of access, separate from that used by pedestrians. Vehicular gates should be inward opening, of



substantial framed construction, and employ galvanised adjustable hinges. They should have a facility for padlocking (manual gates) or electromechanical locking (automated gates) which employ mechanical or electromechanical devices to hold gates in the open position.

# What should I consider with the gate design?

To ensure proper security, the gate design should match that of the adjacent fence and it should not be possible to lift the gate from its hinges. The hinges and lock should be protected in such a way they cannot be used as climbing aids. Care should also be taken in the design to ensure that cross sections do not aid climbing and that it is not possible to pass under the gate.

### How to do I implement a good access control strategy?

Your access points should be limited in number, with one central point located in view of the school office, to allow staff to monitor pupil movement patterns and vehicle access. If you do have other key access points, it's a good idea to restrict use for peak times or emergencies only. It is also worth considering how the gates will be operated, such as intercom systems, coded keypads and swipe cards.

# How do I choose between manual or automated gates?

While automated gates offer more control, manual gates are easier to install and typically come at a lower cost. They don't rely on power and can be easily locked manually by staff. Automated gates, however, offer greater flexibility, including access control tools such as remote controls, keypads and key cards. Automated gates will require regular maintenance by a qualified engineer in order to ensure safe operation.

### What else should I consider?

All access controls must work in conjunction with any fire alarm installation to ensure an efficient evacuation of the site when required. Gates aren't also limited to main entrance points: consider also installing the best gates for different applications, including welded mesh gates for outdoor storage areas and playtime gates for small children.



For dedicated expert advice on installing security gates for your school, phone Jacksons Fencing on 0800 408 47 65, or visit www.jacksons-fencing.co.uk/secondary-schools

# *"It's the biggest thing to happen in education for 500 years"*

Sir Anthony Seldon discusses AI, agency, and whether robots really are set to replace teachers...

### T&I Was there a catalyst that first set you off thinking about the possible influence of AI on education?

AS Yes - one of my governors at Wellington College, Tim Bunting, was very interested in AI, and in the summer of 2015 he asked me to think about looking at it in relation to education. Before then I'd been, if not an actual Luddite, certainly no technology enthusiast; I only started emailing in 2006, when my PA quite rightly bullied me into doing so. It was a massive learning curve for me, then, but although there were plenty of downsides to that, a huge upside was that I had no preconceptions. I think it's often the case that edtech proponents don't really understand about teaching and learning; whereas that's where I started, and so I was able to look with a fresh pair of eyes at how AI might make a real difference. I wasn't starstruck by the technology.

### You wrote The Fourth Education Revolution with Oladimeji Abidoye - how important was his contribution?

Fantastically so. Oladimeji is a research student at the University of Buckingham, where I am Vice-Chancellor. Often, when I am writing a book, I like to work with people who are still making their way through the system – it's helpful, I hope, for them, and we can make discoveries together. Writing a book can be a lonely experience, and this way I have someone with whom I can talk about it all. Besides, I like spending time with young people. Oladimeji was very useful, and a great companion, and on top of that, he understood a million times more about AI than I did, and wrote better than I can. Education is about all of us learning from each other.

### Do you think another education revolution is inevitable?

I do. Technology tends to have its own, magisterial force - it just drives through. What is not inevitable, though, is how we engage with that revolution. At the moment, our education system is geared too much towards passive learning, and unless we change this, there's a real risk that we will end up infantilised by technology, rather than using it for our own benefit. The regime has drastically narrowed the scope of education, and active learning has had to make way for learning the 'right' answer, in the 'right' way. Ironically, the architects of the system do this for the very best of reasons - to improve social mobility. But it doesn't allow agency to be developed for every student. If they are learning the 'right' answer, rather than their answer, then no matter how brilliant they are, they are not thinking independently. And without independent thinking, we will never be able to negotiate our way around these machines, which will always be better than us at coming up with the 'right' answer, anyway.

# What do you think education is for, really?

Well, many people in the DfE would say it's to maximise exam grades - but that's only part of what schools are about. They are there to develop all the aptitudes we have inside us: all our different intelligences. To prepare us for love, for having children, for leisure, for being good citizens, for a life of curiosity and fascination – as well as for employment. And the rise of AI means that different skills will be required for success in the future. So in medicine, for example, the technology will be able to assess symptoms and make accurate diagnoses - but what it won't be able to do, is relate to patients in a human way. I am not saying we need to get rid of the cognitive skills; they are necessary, but they are not sufficient. Rigour and exams matter. But more is needed.

### How optimistic are you when you think about the future of our education system?

I'm agnostic. I do think government 'gets' AI in transport, in the professions, in ethics – but it doesn't yet understand its impact on teaching and learning. That's why we need to start the conversation; this is the biggest thing to happen in education for 500 years.

### **SIR ANTHONY'S QUICK SIX**

### If you had to go and live in any period of history for a year, when would you choose?

Victorian London - I love Dickens, and London was still a rural city then, with the river so much more important than it is today; it's lost its vitality now.

### What achievement are you most proud of in your life or career so far?

The fact that a lot of my former students seem to want to keep in touch with me. Young people have always been the most important part of any school where I've worked. And I've hardly ever given out a single punishment; I believe strongly in restorative justice.

### Who do you think has had the greatest impact on education?

Descartes. He made thinking important, but ultimately, too much so. When he said, "I think, therefore I am", he was profoundly wrong.

### What keeps you awake at night?

For 20 years running boarding schools, I had my mobile phone by my bedside in case anything went wrong. Running the Uni of Buckingham keeps me awake too, hoping and praying the students are all safe.

### Sport or music?

Jogging, listening to Supertramp.

### Who would play you in the movie of your life?

Daniel Craig - because like him, obviously, I am very tall and brawny.



FURTHER INFORMATION The Fourth Education Revolution, by Sir Anthony Seldon with Oladimeji Abidoye, is published by The University of

Buckingham Press. All royalties from the sale of the book go to the Jo Cox Foundation.

<u>"I'm not saying we</u> <u>need to get rid of</u> <u>the cognitive skills;</u> <u>they are necessary,</u> <u>but they are not</u> <u>sufficient. Rigour and</u> <u>exams matter, but</u> more is needed..."









# "We have curated the 'A to Z' of effective edtech"

Tom Martin, Founder & CEO, explains how Ednology can support innovation and digital transformation in your school

### T&I What is Ednology?

TM Our team of pioneering experts have scoured the globe to source, evaluate and bring together the very best products, people and services that make a real difference, positively impact teaching and learning and empower educationalists. Features include a shop, directory and resource bank.

### How can you help budget-strapped schools?

We understand the positive outcomes that technology can have in supporting outstanding teaching and learning, whilst we fully appreciate the challenges to innovation and digital transformation; time, culture and funding. We have developed pragmatic solutions to these challenges and work closely with schools and expert partners to overcome these. Leasing, renting, sharing and community funding all play a vital part in developing sustainable technology use in schools. Our 'reward-ed' lovalty scheme is another way in which we are making tech more accessible (find out more on our website).

### How does research inform your work?

Ednology brings organisation and curation to an otherwise disparate edtech landscape. For the first time schools have a single destination where they can easily see a comprehensive range of options in each technology area. Much traditional education research is slow and inaccessible; if it takes three years to assess the impact of a particular product, initiative or intervention through those means, its likely the technology will have changed significantly or something better will have come along, rendering the outcomes of the research void.

The majority of products you will find at ednology.com are researched

informed. Many of them come from university spin-outs developed with engineers and educationalists. We work with partners such as UCL to undertake rapid evaluation of products and identify the most impactful solutions. Teachers of course play a vital part. Trying products in their own classes provides a

great insight into impact and efficacy; they can evaluate the products through our website, sharing rating, project and lesson plans with the wider community.

# How do your products prepare children for 21st century life?

Critical thinking and problem solving are going to be more important than ever in these uncertain times. Many of the classroom resources we provide proactively support development of these skills. It looks like the world is on the verge of a robot revolution in which more and more once-steady jobs are replaced by machines. According to Nesta, the UK has the potential to generate a million new creative jobs but for this to happen, we need the right skills and infrastructure. Ednology has an amazing collection of products and projects that support creativity in areas such as music technology, app development and digital art.

# How do your products inspire girls to get involved with STEM?

Boys are often taught from a young age if they fall down, to get back in the game. However, girls are generally less willing to take a risk



until they know they have a chance at doing well. Through activities with the STEM products we have curated (SAM Labs, Sphero, Shape Robotics to name a few) there are many opportunities for trial and error, and to take risks in a safe environment. The activities really allow for creativity and extensibility, with which girls tend to especially engage. We specifically identify products that are gender neutral and approachable by all students.

### With so much choice out there, why should schools pick you?

The fact there is so much choice is one of the main reason we formed Ednology. New advancements and developments are happening every day; we have curated together the 'A-Z of edtech' from AV and AR to STEM and robotics. Schools can quickly identify the options for their desired outcomes and get easy access funding mechanisms. Our free-trials programme 'edvaluate' also helps schools try before they buy. You can connect to our expert ednologists through phone or live chat, and they are available to visit schools to advise, train, support, run STEM days and much more. Ednology is the definitive destination for technology in education.

Visit: www.ednology.com; email: info@ednology.com; follow: @ednology

# An impeccable display

If you are looking to update your school's interactive screens, Avocor touch technology is hard to beat...

"Everyone is so used to using touch technology in their personal lives every day, so we wanted to try and replicate that experience using Avocor displays. We wanted to find a solution that moved our students away from independent, personalised learning to a more collaborative learning environment." Daniel Hawkins, headmaster, Child's Hill Primary School, Barnet London

Increasingly, teaching and learning is becoming centred around digital content, collaborative learning environments in the classroom and virtual 'at home' study. At Avocor, the team creates technology that enables this learning shift and integrates the interactive display at the front of the class into daily teaching.

Avocor's solutions are all built on an open platform, meaning there are no proprietary technology restrictions and, as all its solutions include an Intel approved OPS PC slot, it's easy to upgrade to a Windows 10 environment and enjoy all the benefits of renowned Microsoft packages such as PowerPoint, OneNote, Word and Excel.

### **Crystal clear**

"Deploying the Avocor solution here at Rothwell has meant that our children can now read lesson content clearly and they are more engaged as a result." Rothwell Junior and Infant School.



All Avocor interactive displays feature ultra-light weight LED technology and 4K screen resolution, creating crystal clear, stunning image clarity that will keep attention on the display.

Choose from the costeffective E series or the award-winning F series. The E series includes cuttingedge, with first-to-market, 2mm optically bonded glass, delivering the most superior touch experience on an Infrared display available on the market. The Avocor F series includes In  $Glass^{TM}$ touch technology, delivering an extremely responsive and smooth touch experience with up to 20 individual touch points.

Incredibly innovative, Avocor displays include Avocor Intelligent Touch, delivering an intuitive writing experience that is as smooth as putting pen to paper. Fast and precise, the display differentiates easily between pen, finger and palm, creating a fluid collaboration experience for all.

### An easy decision

"Choosing the Avocor solution was an easy decision for us, the superior glass technology means that our children can work in light, bright classroom environments with no need to darken the room to get the best visual result." Michelle Matthews, Headteacher, Goffs Oak Primary and Nursery School.

Avocor Intelligent touch technology enables 'in-app' inking directly into a host of applications including the Microsoft Office suite and the Edge browser, as well as edgeswipe functionality, giving the displays a tablet-like feel that students will love.

All Avocor displays come with a range of collaborative software packages that are designed to work seamlessly with its innovative, interactive displays.

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"Sandwell Academy initiated a refresh programme over the summer of 2017 to replace our existing whiteboard and projector technology with Avocor interactive displays. As an Avocor customer, we feel that we have a direct route of communication with the manufacturer and that our input and feedback around the product is always well received and taken onboard. The service we have received from Avocor has been a key part of why we have decided to standardise on the brand across our estate." Daljeet Kangh, Head of IT, Sandwell Academy

# CLASSROOM INSPIRATION

Fresh ideas to take teaching and learning to the next level

### TOBY BAKER ASKS: WHERE MIGHT AI TAKE EDUCATION?

As artificial intelligence (AI) is heralded as the next big 'revolution' in almost every sector you can imagine – from healthcare to e-commerce – it's hard to separate hype from genuine potential. But amidst this excitement, less attention has been paid to how AI could affect education. So what could an artificially intelligent education system look like?

For learners, this could mean more personalisation and more flexibility. Adaptive learning platforms, such as CogBooks or CenturyTech, use AI to personalise content for learners. This could be based on their progress, learning style, or interests. And platforms provide more flexibility on where learning takes place, opening up informal learning or increasing opportunities for alternative pedagogy such as flipped learning. It's hoped that increasingly sophisticated AI-enabled platforms could provide a cheap alternative to the gold standard of education - one-to-one tutoring.

### New insights

For educators, this could mean less time spent doing routine tasks (like marking homework) and more insights into individual learners. AI-enabled tools such as Assessment21 are automating both formative and summative assessment, while a quarter of schools in China are trialing AI-enabled tools to mark students' essays. With teacher workload reaching critical levels in the UK, this is exciting.

For our education system as a whole, this could mean more data, more insights and more responsiveness to changing needs. What decisions could we make if we had access to insights drawn from data collected in real time? Already, Ofsted is experimenting with AI to target school inspections. And we're seeing pilots using AI to identify best teacher practice, or to identify students at risk of dropping out to target early interventions. It is perhaps as our education system as a whole gets smarter

that we will begin to see the most far-reaching applications of AI.

# Significant questions

Of course, there's no guarantee that more AI means a more effective education system. There is great uncertainty on many issues - from regulation and ethics, to the quality and transparency of AI algorithms. There are also big questions that remain unanswered. How much time should children spend learning through screens rather than from humans? Or, what does algorithmic decision-making mean for accountability? AI has great potential to transform our education system for the better, but that will only happen if we shape its future direction carefully, with the interests of educators and learners as our priority.

# 88%

of Europe's higher education leaders believe that new skills learnt through the use of technologies such as digital fabrication and 3D printing are vital to educational success.

Source: Ricoh Europe





### Toby Baker is assistant programme manager, Education Team, Nesta.

Toby is particularly interested in education to work transition, and enhancing the role of universities. Before his current role, he worked within Nesta's Government Innovation Team, where his efforts

focused on digital social innovation and how technology can be used to enable people to collaborate to address social challenges more effectively.

### **ABOUT NESTA**

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# *Flipping the* **RULEBOOK**

**Tom Capewell**, of the Boulevard Academy, Hull, makes the case for freeing tech from the IT suite...

ike it or loathe it, technology is a fundamental part of today's classroom. For some teachers this conjures up visions of mobile phone distraction and endless loading screens, but as a computer science specialist I would place myself firmly on the other side of the fence. To me, technology is vital, enabling enhanced teaching and learning, and helping students to gain the skills they'll need for work in the digital age.

Happily, my school, The Boulevard Academy in Hull (TBA), embraces this ideology wholeheartedly. Technology isn't banished to the IT suite or kept chained to the teacher's desk; instead, every student is given a laptop when they arrive at the school – and, if they keep to their Digital Learning Agreement, gets to keep it when they finish their GCSEs.

# Flipping the classroom

For us as teachers at TBA. having laptops in the class provides the opportunity to transform the way we conduct our lessons, but I'm not going to pretend it hasn't been a bit of a learning curve! Every young person having a mobile device with them in the classroom means that we can 'flip' our lessons, with students following their own learning paths, and teachers answering questions when needed.

Adapting to the 'flipped' classroom means changing the way we think about teaching, and even as a computer science teacher and self-confessed technology evangelist I'll admit to being a little apprehensive at first. However the way that the school has chosen to embed this technology in the classroom, and the enthusiasm that the students have for it, have made acclimatising to the system remarkably easy.

Even teachers who would previously have panicked at the sight of a USB stick have incorporated the use of the school laptops into their teaching and learning, with some of our departments now using flipped learning in a third of their lessons. And it's not just the hardware that's driven this change. Our VLE, Canvas, has been instrumental in making the laptops a success, by creating a space for resources to be collated, and enabling teachers and students to collaborate and discuss assignments.

This holistic approach to education technology is one of the reasons it has been so successful at The Boulevard Academy. Instead of procuring tech for tech's sake, or bringing it in to plug gaps as a last minute fix, we have taken steps to ensure that all of our classroom technology works together as seamlessly as possible, so that the focus can be

### "Students are free to look for their own resources and lead their own learning"





placed firmly on what's important – pedagogy, teaching and learning.

Although I'd like to be the one to take the credit for this, it's not just the digitally inclined staff members that are leading the charge for effective use of technology here. The Senior Leadership Team at TBA has been committed to this concept since the academy was formed, ensuring that technology is ingrained in its goals and aims – the importance of this can't be overstated.

### Leading their own learning

One of the things that most excites me about the flipped style of learning, (and is one of its most notable benefits), is the freedom it brings to the classroom, for the students as much as for the teachers. With the laptops at their disposal, lessons become as much about seeking out knowledge as absorbing it; students are free to look for their own resources and lead their own learning, and teachers are on hand to offer





guidance and support when it's needed.

In a flipped learning session like this, teachers can brief the students on the aims of the lesson, then direct their attention where it is needed most. Within our school this has enabled us to have mixed ability classes rather than implementing a set system for most subjects, as students who are more able to work independently can get on with the assignment, and those who need the most support can get more one on one time with their teacher. The outcomes we've seen from our mixed classes

have been really positive, with lower ability students able to see examples of high quality work from their classmates, and higher ability students able to extend their learning by completing extension tasks.

This practice goes to the heart of our ethos when it comes to technology – we want it to enhance the student experience, and create an environment that encourages a passion for learning. By using the laptops and flipped lessons we can instill this in our students, and empower them to think of learning as a lifelong journey rather than something that only exists in textbooks.

### Looking to the future

Every teacher is aware that today's workplace prioritises digital skills, and we want to make sure that the students we teach are prepared for that. This has become even more important recently with the scrapping of the ICT GCSE and A Level qualifications, meaning that incorporating technology and digital literacy across the curriculum is crucial.

Another consideration for us is that a number of our students at TBA come from

### 4 WAYS TO GET THE BEST FOR YOUR CLASSROOM

1. Have a digital strategy across your school - discuss what you want to get out of your classroom tech and what you need in order to make that happen.

2. Get recommendations - speak to other schools about what has worked for them, and what might work for you.

3. Encourage staff to be adventurous and share techniques – there's more than one way to use technology successfully.

**4**. Fully investigate the features of your school's chosen VLE – many schools do not utilise a fraction of its capabilities.

lower-income households, and without the laptops we provide for them at school, they may not have access to the kind of technology that other young people take for granted. We feel that the best education technology shouldn't just be seen as a tool for pedagogy but also as an equaliser for our students, levelling the playing field.

We want to give our students the best foundation we can in digital proficiency, and sometimes that means deviating from the traditional way of doing things. At The Boulevard Academy I think we're ahead of the curve, and I believe that we'll soon begin to see more schools embracing education technology to ensure every student is prepared for a digital world.

#### **ABOUT THE AUTHOR**

Tom Capewell is lead computer science teacher at The Boulevard Academy, Hull



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PowerGistics' Towers. Your mobile charging Tower will provide

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# Smash those STEREOTYPES

When **Amy Ryman** realised just how disengaged the girls at her school were with science, technology, engineering and maths, she decided to take action...

aving spent the week in assemblies advertising the new STEM club for KS4, and emphasising all being welcome, the end of the day arrives and I watch with an increasingly heavy heart the rabble of students crashing into the classroom. "Forty students, that's amazing!" my second in charge exclaims afterwards - but I can't help but feel concerned that only two of them were girls.

I was pleased at the turn out, but I was not going to

let anyone miss out on this; and after a bit of digging it appeared I was teetering on the tip of an iceberg.

"We don't get a look in" said one of the girls, and, "They're too loud" complained another, when I asked them why they hadn't come. "What about a club of your own... just for girls?" I suggested. "Can there be cake?" wondered another student. So it was set up for the following week. I warned them there wouldn't be anything 'girly' happening – we'd be covering the same content as the other STEM club.

Baking cakes at midnight the night before the launch, I wondered how many I should make. Feeling somewhat optimistic, I went for 30, thinking we could always take them to the staffroom if no one turned up.

Walking down the corridor at the end of the following day, a rather frazzled looking NQT came rushing towards me. "There's a big group of girls outside your classroom, and they won't move along," she told me. "They said they are waiting for you!" I started to smile – and to my absolute amazement, when I arrived at the door there were 30 girls waiting to get in. And that was only year 9; by the time we started sixty girls were crammed into the classroom, sharing the cakes one between two!

# 'Weird, in a good way'

During the weeks that followed, the girls kept coming back (even without cake). They told us how it felt at last to have a club they could feel 'comfortable' in, with the opportunity to 'make mistakes and it be ok', and to 'bring art and science together, which is weird, but in a good way'.

That term the girls designed and built prototypes of devices to help others. Their innovation and creativity was amazing: one group came up with a simple distiller which could be used in the developing world, to help clean the water from stagnant pools. Another group worked on a female friendly back pack for doing the Duke of Edinborough Awards, and there was also my favourite innovation, washable sanitary products for homeless women.

It was in that classroom the idea of STEMgirls Club was born. Almost half (49%) of secondary state schools had no girls taking physics at A level last year. Less than 10% of employers in STEM are female. And yet in a survey of 300 female engineers, 84% were either happy or extremely happy with their career choice.

STEMgirls Club is aimed at 14 to 16 year olds and consists of ten sessions per term delivered by a teacher at the school and resourced by STEMgirls Club. Staff are equipped with materials that engage the girls in the vanities of engineering and link to engineering careers. Activities range from designing prosthetic limbs for landmine victims in Uganda, to designing devices and coding them to alert people with disabilities when, for example, their bath has run enough.



### Their own words

Although it is still early days, we've already been getting some great feedback. "Ever since I was really young, I'd been brought up in an environment where I was constantly taught and told that women are and always will be inferior to men because they simply just don't 'have it in them'. And I believed it," said one participant. "But then STEM club became a sort of big thing and I thought 'hmmm, might as well'. If I'm being honest, I thought that STEMgirls would be really girly and cheesy so I wasn't that interested but I gave it a go anyway and I was really wrong. We do all sorts of cool things like making prosthetic limbs and now I'm starting learn and embrace lots of new skills I never thought I had in me!"

"After joining STEM club I realised how important me being a female interested in physics and maths could be to the real world," another

### 4 WAYS TO WAKE GIRLS UP TO THEIR STEM POTENTIAL

+ Set up a girls only club

+ Be mindful of the images you use in your teaching resources - try to include equal number of female and male examples

+ Try not to use gendered language when referring to jobs and careers in STEM

+ Actively seek out diverse teachers for your team – and in any case, invite positive female role models to your school



told me. "I realised I could be someone who could change the way we live in the world. In the future I want to take physics and maths A Level, because of the club".

Studies have shown that girls take time, and require a lot of questions to be answered, before embarking on a particular career path. STEMgirls club, running over the year, is designed to nurture and allow time and the positive role models required for young women to explore these questions in a safe and unthreatening environment. Participating schools are also invited to visit STEM businesses, be visited by female STEM role models and have first hand links with STEM businesses providing opportunities for work experience, apprenticeships and post

apprenticeships and post graduate positions.

Of course in the long run these girls will need to learn

how to adjust to working in what is likely initially to be a predominantly male environment. However STEMgirls club has started to address gender stereotyping in the classroom more generally. The boys in the school see their female peers in a different light now, raising the girls' profile and throwing up questions about unconscious gender bias in our teaching; which has in turn led to teacher training on how not to reinforce gender stereotyping.

If you would like to know more about STEMgirls club or want to join the movement, visit www.stemgirlsclub.com



#### ABOUT THE AUTHOR Amy Ryman is head of science at Harris City Academy Crystal Palace.

# "Bigger is not always better"

To get the most educational value from your 3D printer, it's important to make sure you're using the right tool for the job, advises **Chris Calver** 

aking stuff is really cool. There is something very satisfying about needing a part, designing it yourself to your own specification, making it and putting it to use. I love making things. Drones, robots, a go kart for my daughter. But whatever I make, there is one tool that I wouldn't be without.

In the modern Design & Technology classroom, you'll see plenty of technology for making things. Whilst it's unlikely that a department will have everything, you are almost certain to see either a laser cutter, CNC machine, lathe or a vacuum former – and it's also likely that you will now see a 3D printer.

### **Consider the options**

3D printing is by no means a new concept. When I was at school, I recall being amazed by seeing a model emerging from the resin of a stereolithography machine on the BBC's Tomorrow's World program. This method of curing a resin with a focussed ultraviolet light is still common in today's 3D printers, but what has changed since the late 80s and early 90s is that 3D printers have been made simple, more accessible and above all, available at a lower cost; which

means that almost anybody can experiment with additive manufacturing.

The reduction in price has been the biggest driver for the large-scale adoption of 3D printers in schools, and almost every establishment I visit now has a 3D printer of some sort. The days of needing a £10,000 machine are long gone, with excellent turn-key machines available for as little as £500. In schools, however, there is a big variation in opinion as to how useful 3D printers are - and this opinion will be heavily influenced by the type of use the machine is getting and how successful the results are.

As with all pieces of equipment, the most important thing is using the right tool for the right job. When deciding if 3D printing is a good choice for producing your design, some of the key things to consider are time, the shape and form of the object, and most importantly, how you are going to design your 3D model. So how can you get the most from a 3D printer?

### **Design wisely**

Don't fall into the trap of merely demonstrating the process by downloading and printing files from the internet. 3D printers can form a really valuable part

### "3D printers lend themselves to making parts much better than they do to creating entire objects..."

of the design process, but you will need to be able to create 3D models using one of the many pieces of 3D CAD software that exist on the market if you are to get the most from your printer. The good news is that the software doesn't have to cost anything. There is a wealth of CAD tools available that are free to use and that will give you all the features that you will ever need. The other good news is that the days of needing high-powered workstation computers for CAD are also a thing of the past, which means you have probably already got everything you need to start using this kind of software in your school.

If you have no CAD experience at all, TinkerCAD is a great place to start. It runs in your browser window and allows you to 'borrow' other TinkerCAD users projects and modify them, which is a great way to see how others create 3D models and work your way up to creating your own designs from scratch. For these that fancy something a bit more high-end, have a look at Fusion360, which is industry-level CAD software that still has a shallow enough learning curve to make it accessible to novices.

### Time and support

The process of 3D printing is quite slow, especially when using the extruded plastic filament style machines, which are the type most commonly used in schools. If you are creating a particularly large piece, it's not unheard of for prints to take 20 hours – and with a class of 20 students in a D&T workshop you could be looking at weeks of print time to get through everybody. Because of this, it's important to get your students to design objects that can be 3D printed in a set time frame.

### Part by part

Once you have mastered CAD, it's tempting to make some extremely complex models to print. However, 3D printers lend themselves to making parts much better than making entire objects. For example, if you were making an architectural model of a building, rather than trying to 3D print the entire design, it's better to use laser or hand cut modelling board for large flat expanses like walls, but create 3D printed parts for items such as corbels, buttresses, staircases or other intricate shapes.

Think about the process of 3D printing when you are deciding what is the best tool for producing your part. To minimise post-production work, you want your model to require as little support material as possible, which can be helped by choosing the optimal orientation on the bed when printing the part or minimising the number of overhangs where the angles are greater than 45 degrees, since most printers can happily print 45 degrees or less with no support material at all When selecting a 3D

CLASSROOM INSPIRATION

<u>"The days of needing a £10,000</u> machine are long gone"



printer, the vast ranges of different machines and specifications can make choosing the right one a daunting task. One of the factors that needs to be considered is the build volume, which controls the maximum size of object that you can produce. Generally speaking, printers with a bigger build volume tend to be more expensive – but bigger is not always better, especially in a classroom environment. Sometimes, having a larger number of smaller machines can be more beneficial than one large one, because whilst

you can place lots of different models on a large bed to be produced at the same time, you need to wait until all the models have finished printing before the students can get their hands on their designs.

### **Experiment and learn**

Why is this a big deal? Because design is always an iterative process and you probably won't get it right first time. By having a greater number of smaller machines, you maximise the amount of availability for starting new prints, which means students can get their designs manufactured as soon as the next iteration is ready.

Whatever machine you end up with, make sure you experiment with it, so that you know how it is going to perform. This knowledge will help you to give good advice to your students when they are designing parts for their own creations. How much shrinkage will they need to accommodate, for example? What is the smallest wall thickness it can reliably print? It's a good idea to have a few ready made example models which can be used

to demonstrate how long a print of a given size is likely to take.

Now, go and make something cool!



ABOUT THE AUTHOR Chris Calver is the head of education at Rapid Electronics Limited. He is a STEM Ambassador, maker, and the founder of the team that created the Airgineers schools drone competition, which gives students an excellent focus for CAD and 3D printing projects.

# *Does artificial intelligence* MEAN REAL PROGRESS?

**Graham Smith** explains why classroom implementation of new technologies is essential for the future of the IT industry

magine a future where technology could plan your lessons, differentiate learning objectives and flag up intervention opportunities — without you lifting a finger. Sounds idyllic, doesn't it? The truth is, artificial intelligence (AI) could make this a reality; which is why we need to be having the discussion about its use in our schools now.

New technology is already helping teachers to teach, but it could also open the eyes of students to the technical opportunities that await them. After all, the world's future big data analysts, computer vision engineers and DevOps leads could well be sitting in your classroom this year. Although I use the word 'sitting' lightly; some may be running, jumping or climbing out of the window.

### Stimulating interest

Britain's IT skills shortage isn't slowing down and a common criticism is that the sector simply isn't attractive to young people. Could this be related to the experience of technology they have during their time at school?

According to a Mondelez International survey of more than 1,500 teenagers, 44 per cent believed that science, technology, engineering and maths (STEM) subjects were uninteresting. What's more, almost half of the participants considered STEM subjects as less enjoyable than other subject areas.



"Outside of education, the digital revolution is racing ahead, with technologies like robotics, artificial intelligence and virtual reality entering our homes and public spaces"

Currently, pupils primarily experience technology in IT lessons (and often not all beyond KS3, if they don't take a computing qualification for GCSE) – whereas actually, there's a strong argument to suggest they should be using technology in almost all of their classes. And while students do need to learn the basics of software such as Microsoft Word and Microsoft Excel before they can work with more complex technology, it mustn't stop with these basic office programs.

### A workplace revolution

Outside of education, the digital revolution is racing ahead, with technologies like robotics, artificial intelligence and virtual reality entering our homes and public spaces, and becoming a standard part of most workplaces. Consider this as an example: imagine an e-commerce site has received a returned order to its warehouse. Using software, the technology can automatically detect which order number and account the return is associated with. Turns out, it's Emily from Carlisle, returning a dress due to a manufacturing fault.

Thanks to AI, the system can flag up this manufacturing fault and identify other units that were manufactured in the same batch. For humans, this means they are no longer needed to carry out mundane stock checking, and are being better used elsewhere.

This is just one example, but technology like this is being created and implemented in workplaces all over the world. Huge technological changes are taking place outside of the school gates; but students are not necessarily accessing the right curriculum to understand these technologies when they enter adult life.

### **New roles**

The more our economy relies on automation, the more we'll need talented workers who can implement, manage and improve upon this technology – and not just for warehousing and ecommerce, but within a whole range of other industries including manufacturing, retail and energy, to name just a few. As an example, a study by the Bureau of Labor Statistics suggests that the number of computer analysts required will jump by a massive 21 per cent before 2024.

However, before we can pave paths for exciting new roles for Britain's future IT workers, we need to bridge the current skills gap relating to automated technology. Britain's digital sector is booming, and as a result, it is creating jobs at twice the rate of other industries. Take the first quarter of 2017 as an example: 12 percent of all British job postings were for technology positions. But without experience of using the latest innovations in the classroom, how can the next generation prepare to fill these vacancies in the future?

MPs have warned that schools are not preparing children to succeed in a world where technology has transformed the workspace. A report by the cross-party Science and Technology Committee suggests that the education system should be adapted to "focus on things that machines will be less good at for longer", rather than skills that are rapidly becoming obsolete.

### The future, now

Such approaches to schooling are already firmly in place at the epicentres of the technological revolution, Silicon Valley and Silicon Roundabout. Microsoft, for example, is disrupting the status quo with its Microsoft Education programme: and the organisation is certainly eager to see schooling reimagined. Satya Nadella, CEO, stated at Build 2018 that Microsoft is introducing "new technologies to help every developer be an AI developer". The demand for AI-savvy workers is already here, and those with hands on experience of the technology's potential will be at an advantage when it comes to snapping up those positions.

While it's hard to predict exactly how Britain's classrooms will evolve over the next decade, one thing's for certain, we need to make sure that the young people in them are equipped to understand new technologies. What's more, we need to ensure that those who have the potential to go on to be leading Microsoft Azure specialists or machine learning engineers, have the option to learn about the latest developments in these areas during their time in education.

Filling gaps in the current curriculum with new technologies, like AI and VR, will help to bridge the IT skills shortage we are currently experiencing. Although it will take a few years to see a significant

-

benefit, the change is essential for the future of our economy. Ultimately, it's not really a complicated issue: if it makes teachers' lives a bit easier, and students' knowledge more advanced, then it's hard to argue against the arrival of such technology into Britain's classrooms.

What do you think? Tweet the author at @CuroTalent with your own experiences and opinions.



ABOUT THE AUTHOR Graham Smith is head of marketing for Microsoft recruitment partner, Curo Talent.

# *10 ways to* SPICE UP COMPUTING

If your current IT programme of study isn't getting students excited, why not try something a little different, suggests **Terry Freedman** 

ack in 2012. Michael Gove (remember him?) made that speech about ICT; the one in which he described a programme of study that was leaving pupils 'bored out of their minds being taught how to use Word and Excel by bored teachers' - and promised to replace it with a whizzy, cutting edge, 'open source' curriculum. crammed with stimulating lessons where students would be able to write cool animations and create their own smartphone apps. So, how's that going? Alas, while there are certainly schools where very exciting things indeed are going on in computing classes, there are also many where being taught coding is just as dull as the lessons it has replaced used to be; often because the teachers don't feel confident enough about the subject to get creative. However, it's not that hard to making computing genuinely engaging for young people – here are ten easy ideas to get you started:

### **1. Better questions**

A good place to start any computing lesson is with a question: 'What is the problem we're trying to solve?' That will lead on to other queries, such as, 'Is programming the key to a solution? If so, what does the program need to do? How should it do it? Why?' When it comes to

thinking of challenging questions, you could do a lot worse than consult Jamie McKenzie's Questioning Toolkit, which you will find at **bit.ly/tsQuestions**. It is not geared specifically to computing, but despite that, and the fact that it's over 20 years old, it is extremely useful. It's divided into a number of sections, such as Unanswerable Questions. Essential Questions and Probing Questions. Read through them, and you'll soon be drafting your own, computing-related queries with which to kick off a class discussion or start the kids off on a research project.

# 2. Talking to lamp posts

A few years ago, a company called Pan Studio recognised that every item of street furniture has a number. That number is held in a database, and can be communicated with via text messaging. They got people to text lamp posts, which appeared to respond, via text, although in fact the responses were randomly generated. Take a look at this short video about the 'Hello Lamp Post' project, at **bit.ly/tsLampPost**.

So what does this have to do with computing? Two things. First, it can work as part of a recruitment campaign. It shows that computing can be more fun, and appeal to more kinds of people, than most students think. Secondly, it ought to suggest some ideas for investigation by your pupils, along the lines of, 'how can we make our school environment more interactive? How might programming help?"

### 3. Project-based learning

If we amalgamate the ideas of better questions and Hello Lamp Post, we arrive at the idea of project-based learning. Set the

students a question that cannot be answered easily, or even get them to identify

CLASSROOM SOLUTIONS

an issue for themselves. Then give them time to work on a solution in small teams. This approach tends to involve several activities, such as research, analysis and prototyping.

### 4. Reality shows

As hinted at above, if you want to really hook students, get them working on authentic projects. You and your pupils can look for ideas all around you, starting with school-based issues like, 'how can we improve attendance at parents' evenings?'.

# 5. International adventures

If you really want to make an impact in terms of student engagement, why not create projects that involve working with schools in other countries? Pupils will gain experience in working with people from other cultures. and of useful skills like Skype conversations and coordination (especially if the time zones involved are several hours apart). Build in a requirement for the students to make a 5-minute video about their findings, and you'll have an archive for future use.

To whet your appetite for such an undertaking, read about an international project focused on innovation, at **bit.ly/ tsNatGeo**. The scale here is far beyond the resources of any one school, but it will give you a flavour of the benefits. Not sure how to find other schools? A good starting point is Skype in the Classroom, at **bit.ly/tsSkype**.

If launching into an international project is too difficult at the moment, experiment on a small scale by partnering with another school in the same local authority or multi-academy trust.

### 6. Local impact

At the other end of the scale, think *very* local. What might be improved in your area, and how could computing help? If you're stumped for ideas, then get your students working on it, and if they can't come up with anything, take a look at the ideas of the 2018 finalists for the Apps for Good awards at **bit.ly**/ **tsapps4good**.

### 7. Useless - but fun!

Having espoused the benefits of offering activities with a real and practical application, I should point out that there is much to be said for doing the opposite, too, and finding something relatively frivolous, but that will still spark learning. A good starting point is the Computer Science for Fun website at **cs4fn.org**. Look in the magazine's archive for a wealth of great ideas involving puzzles, magic tricks and more.

### 8. Coding anarchy

Someone has created a JavaScript game in which the game itself changes as you change the code it's based on. It's called Untrusted, and you can find it at **bit.ly/tsuntrusted**. Could you do something similar in Python? How about setting that as a challenge for your students?

### 9. Robotic revolutions

If you're interested in combining 'making' with programming, robotics is an interesting idea to explore; there are plenty of kits out there if you have the time to investigate and the money to invest. An advantage of robotics is that everyone is talking about robots, bots and artificial intelligence these days, so it's highly topical and relevant. Another advantage is that it becomes immediately obvious whether your code has worked or not.

### 10. Drone control

Finally, if you really want to be on the cutting edge, look into teaching with drones. This will involve not only ordinary coding, but other areas such as GPS. Students will also need to be aware of what they are and are not allowed to do, so plenty of research will be necessary (find out more about this at **bit.ly/tsdrones**).



ABOUT THE AUTHOR Terry Freedman is a freelance consultant, trainer and writer. He publishes the ICT & Computing in Education website at www. ictineducation.org

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CLASSROOM INSPIRATION PARTNER CONTENT



# "We wanted to disrupt the market in robotics"

Chris Burgess, founder of CBiS Education, shares the company's innovative journey so far...



# T&I What's different about CBiS Education?

**CB** Since entering the education market, CBiS Education has focused on innovating and implementing what we call an 'Integrated Engagement Learning' approach. First, we spent time with teachers and students to try and understand and maximise engagement, which has led us developing robotic kits that really hook young people into learning. Then, we worked with educators to write exciting curriculum content that links both to the national computing curriculum for KS2 and KS3, as well as to the national design & technology curriculum. Finally, our CPD workshops have been incredibly successful by giving teachers an opportunity for hands-on, 'straight to classroom' training that always gets 5-star reviews.

# How is your IEL approach being received by schools?

We have been really pleased with the results, and the feedback we've been getting - but, always striving to be better, we wanted to disrupt the market in robotics and tackle one of the biggest problems faced by schools nationwide... cash! Despite teachers' desire to use cool robot hardware, SOW or CPD, there is an ever-growing shortfall in budget to buy the resources to deliver all this. Naturally, in a class of 30 children, there will a mix of aptitudes: some children may struggle with the subject, or perhaps have SEN; some are more able. Both groups have the potential to lose engagement if the lesson content is too hard or too easy – so how to engage with so many without blowing all the budget?

### How indeed? What's your suggestion?

We looked at materials that could be used to build robots and to get every child hooked, combining visual, auditory and kinesthetic methods. Eventually, we launched Cardboard2Code – a free pack of 3 modules for building a robot arm. Cardboard2Code was downloaded and shared by thousands of schools all over the world; it was great for not only teaching computing and design & technology to children, but also at giving the teachers a healthy dose of CPD. The next step was to bundle Cardboard2Code up in a box, which we did in 2017 when we launched our 'Consumable Robotics' brand, BinaryBots.

### So, tell us about BinaryBots...

Well, BinaryBots and the Consumable Robotics kits ticked a lot of boxes: the engagement and ownership is maxed out, as students build their own robot from flat pack cardboard, and then can personalise it with some awesome designs - we get some great pictures of our robot 'Dimm' dressed as various Minecraft characters! Next they can bring the robot to life, by using the awesome BBC micro:bit computer and all the sensors in the box - this achieves great impact in achieving computing areas of study because the youngsters are so keen to make their robot do things. But more importantly, the costs of the kits are incredibly low - and with options to separate out the electronics from the robot, once a school has a class set of micro:bits and sensors, a top up robot kit for a child to keep is only £10.

### How can teachers judge which kits will best suit their students?

We suggest a skills trajectory graph rather than an age bracket to try and gauge the best kits to use in class those at the bottom of the aptitude pyramid, who may have never tried computing, coding or building robots before are 'beginners'; those who have tried before, or show an innate aptitude for the subject, can try a higher level of kit, or may be able to do more with the cardboard version. This has also led us to launch our next range of BinaryBots, 'Planet Totem' - the Totem structure has been getting rave reviews from teachers globally, but also the home user, with parents buying kits for their children to get them engaged with the digital age via robotics.

Check out www.cbis.education for more information about CBiS Education's kits,

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teachwire.net

or get in touch to discuss your requirements.

# Safeguarding, made simple

When it comes to visitor management systems, VisiTapp does it all, with ease...

GDPR has consigned school paper 'sign in sheets' to the shredder of history. Disclosing an individual's personal details is no longer acceptable, nor is the huge cost of some signing in books. But what is the alternative? The answer is VisiTapp – the low cost, feature-rich, web based School Visitor Management System from idXtra. This easy to use system not only lets visitors 'self sign in', it can also sign in and record working hours for external staff, support workers and contractors – all at the swipe of a card or the touch of a fingerprint.

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The system includes a touch screen, rear screen, web camera, 2D barcode card reader and label printer. It can pre register groups, sign-in regular visitors via a smart card or fingerprint, and issue photograph passes to new guests – automatically. It also includes an emergency instant 'roll call' feature, essential for fire drills or emergency evacuations. This can be triggered by an optional physical 'emergency' button! VisiTapp will help you meet your GDPR obligations, enhance your safeguarding, and reassure parents



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ocr acse Revision

Science

# Resources update

The revision method that really works: repeated and spaced practice throughout

Collins GCSE 9-1 Computer Science revision and practice books are based on a 'repeated and spaced practice' approach.

Research proves that, compared to other revision methods, this has the most impact on exam results. When information is broken up into a number of short sessions and spaced out, the repetition of the learning point after a period of time helps students to remember it better long term. The increasingly wider spacing is important, as it requires the learner to use more effort to retrieve the information each time.



A SUCCINCT OVERVIEW Collins GCSE 9-1 Computer Science gives students a succinct overview of the complete course.

The book includes the following sections to really help students follow this method with ease: Revise (the revision content broken down into topics); Practise (exam-style questions linked to the revision topic); Review (a chance to revisit questions linked to previous topics covered); and Mix-it-up (a mix of exam-style questions from various topics covered in the revision sections). There is also a full Workbook, offering further exam-style practice covering all topics and a Practice paper so that students can try an exam-style paper.

Compute

Teachers can visit **collins.co.uk/revision** to find out more about this approach.

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### More information

Find out more at: collins.co.uk/revision



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# **Engagement is not enough!**

Great hardware, sound curriculum content and strong CPD – put them all together and you have a recipe for exceptional learning, says **Chris Burgess** 

n 2012 I was approached by a teacher of ICT from an academy in Yorkshire, who was trying to engage with a group of 60 year 9 students to try and get them into computing and engineering.

As a company, we had been working on some interesting developments that had been showcased at the MOD grand challenge around IED and sniper detection; the teacher had seen us via a news report and thought it would be great if we could demonstrate some cool tech, and thereby inspire the students towards a potential career path into computing or some other STEM-related field.

After two solid hours of the young people being utterly hooked – and before our eyes starting to code the robots to move, even without any prior experience – I was enthused about the possibilities of working with schools.

What I had experienced was engagement; and I thought it was great! Over the next few months we started to offer free workshops to schools and were putting together kits by hand so that we could offer hardware for the classroom. I was craving that same experience again: the engagement, the starry-eyed children using the technology, and the look on the teachers' faces as they started coding...

### Workshop action

So we booked some workshops and hit the road. And I remember the first one really clearly. There was the same result as before, with girls and boys in Y8 learning the wizardry of coding, and asking some awesome questions. At the end, while the kids were out at lunch break and we were packing up, I started talking to the teacher, and the conversation went a bit like this:

*Me:* So, *kids loved it, what do you think?* 

Teacher: LOVED IT. They were so engaged! Me: So, want some kits? Only £300 each. Teacher: Nah, its ok thanks.

Me: But... why? Teacher: It's great that the kids were hooked – but honestly, what am I teaching them? I have no idea – got any curriculum?

Curriculum? It sounds so simple now, but as a newbie in the education sector who had just found out all about engagement, it simply hadn't occurred to me. I was buzzing, but the teacher was right: obviously it's critical that children are engaged, but that's just *one* part of achieving proper learning and proper impact.

#### **Content matters**

Now, this won't come as any news to educators reading this – but writing lesson plans and schemes of work, matching them to the national curriculum, and trying to assess the children's learning at the end of them, is *really* hard. I say that with all humility... because it's what we tried to do next.

We adopted a Moodle platform, which was helpful at structuring all our curriculum content, and also it helped us to restructure what we put with our robotic kits, so that they added more benefit when linking to the curriculum that we already had.

Let's move on, then, to the first workshop in 2014. The kids were still engaged, I was demonstrating the hardware using the curriculum content (check!), and they did a cracking job completing a lesson for us. I thought we'd nailed it. So, in the break time, I had a conversation with a teacher:

Me: So, kids loved it, what do you think?

Teacher: LOVED IT. They were so engaged!

Me: So, want some kits? £300 each – comes with free curriculum content.

Teacher: Nah, it's ok thanks.

Me: But... why?

Teacher: It's great that the kids were hooked. And I'm loving the curriculum content – it means I know what to teach them – but honestly, this stuff scares the bejesus out of me. I don't know how I'm going to teach this on my own – do you guys offer CPD?

### **Integrated** approach

Now, honestly, although I feel a bit silly for admitting it, I had to Google CPD the first time I heard it. According to The CPD Certification Service, it is "the holistic commitment of professionals towards the enhancement of



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<u>"Spending valuable budget on</u> anything less than a holistic, combined offering can leave you short when you most want to excel"

> High Engagement Education Technology

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**CPD** Training

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personal skills and proficiency throughout their careers." In other words, what that teacher really wanted was *training*. Hands on stuff, guides, the 'how to' of what we were offering.

And with a flash of realisation, I understood that, of course, the same way you engage the students with high engagement hardware – i.e. using visual, auditory and kinesthetic approaches – should be applied to teacher training, too.

I was excited to think I had a potential winning formula for learning. We started calling it 'Integrated Engagement Learning':

- + High Engagement Hardware
- + Curriculum Content
- + CPD Workshops

The best way to visualise it is as a Venn diagram (see above, right)

In our opinion, if you only provide the hardware and training but lack the curriculum content you have a shortfall. The same applies when you combine curriculum resources and training – although some online tools and platforms are incredible, without the hardware that combines auditory, visual and kinesthetic approaches for teaching, you risk not engaging with at least some of your audience. You need all three elements for effective learning. Using I.E.L. teachers can maximize engagement; they have the tools/hardware, the 'what to teach' and the 'how to teach'.

### Accept no less

From hundreds of schools that we see around the UK every year, there are key issues that are occurring that I.E.L. would fix. For example, so many times we have seen teachers buy hardware for the kids, write their own lesson plans, and learn how to teach them – but then leave, so the school lacks someone with the same skill sets and the hardware ends up gathering dust. With I.E.L. the same training and curriculum content is available for everyone, so any new teachers have the same holistic offering and the effective learning can continue without having to spend more cash on something else.

I would advise teachers to hold suppliers to account; spending valuable budget on anything less than a holistic, combined offering can leave you short when you most want to excel with the class.

For us, the proof of the success of our approach is with the teachers and students who are using it and achieving more. Mudassir Mir, director of personalised learning for STEM at Bradford Academy, is one of the long term supporters of the I.E.L. approach and his feedback is clear. "Integrated engagement learning is

much more to me than just smart procurement of hardware to deliver my lessons," he explains. "Without it, I end up spending more of my personal time planning and writing schemes of work. I.E.L. allows me to get it right first time, and its common sense to want solid, hands on training for my team before committing to spend on something they have to use in the class."



ABOUTTHE AUTHOR Chris Burgess is the founder CBiS Education (www.cbis.education)

# How to teach the 'always on' GENERATION

Touchscreen technology can promote interactive, collaborative learning, says **Natalie Harris-Briggs** – but you need to make the most of what's possible...

uture classroom design looks more and more likely to be focused on collaborative learning, and interactive display technology has the potential to have a vast and versatile impact on the ways in which students learn. So how do we, as educators, use the hardware and software at our disposal to engage the Generation Z demographic and embrace their 'always on, instant information' culture? How do we move to a more

collaborative environment - and how can technology help create vibrant learning experiences that keep their audience completely engaged?

### Game on

On way is through the gamification of lessons; which teachers have already been doing for years for a variety of reasons, from making learning more fun to improving strategic thinking, teamwork and controlled competitiveness. But of course, the students of today play computer games more than ever

before. From smartphones to tablets, and PCs to gaming consoles, children have practically unlimited access to this kind of entertainment. So, if teachers are to really grab the attention of their students with games in the classroom, they need to strive to make their offerings as colourful and engaging as those played outside of it

Top-notch classroom technology, such as high quality interactive displays, can make it possible for teachers to present educational computer games so that the entire class is able to see and engage. In fact, Ollie Bray, Education Scotland's National Adviser for Emerging Technologies in Learning, recently described ways in which gamification can be effectively employed in a learning environment; specifically, using Mario and Sonic Winter Olympics game played on the Wii to collect authentic data for manipulation in a numeracy lesson. In the process, students are able to apply numeracy techniques to data that means something to them, which helps them to become more engaged in the subject matter.

The use of computer games can be an excellent way to introduce students to topics that might otherwise be deemed uninteresting by many young people. Future classroom technology could, therefore, include games consoles connected to 4K interactive display screens to provide an immersive visual experience. resources, anywhere and anytime, aiding homework and revision. Cloud-based collaboration applications such as Nureva Span enable work groups to collaborate in real-time, regardless of location.

Moreover, cloud computing is a cheaper solution to on-premise data storage and networks: all that's needed is a reliable internet connection, and there's no requirement to invest in hardware and software. Regular maintenance isn't required like it is with on-premise server, either. By choosing an interactive display with an on-board PC, teachers can gain instant access to their content directly from the display without needing to carry around a laptop.

# "Students can learn visually and virtually..."

### 24/7 learning

Although the cloud has been changing the way we store and access our data and documents for years, uptake on this new classroom technology in schools is not as high as it could be. However, it's a development that offers a huge variety of benefits for teachers and students alike.

The cloud can provide instant access to lesson plans, presentations and

### OK, Google...

Perhaps one of the simplest – but most effective – ways in which new classroom technology can be used is to access the internet for research. Today's students tend to turn to Google to answer their questions, but some schools are resistant to incorporating this type of independent research into the classroom. While teachers are understandably keen for young people to absorb specific education materials supplied by them, independent research provides the opportunity to teach students to differentiate between reliable and unreliable online sources and to help them to use the internet in a way that supports their learning. It can also give pupils the chance to read more deeply into the topics covered in the classroom if they're particularly interested in them.

Another excellent resource to engage the class involves incorporating video conferencing into lessons, allowing students to be taught by teachers in different cities or countries, or to interact with experts all over the world to gain extra insights into the learning material. This also enables collaboration between different classes or even schools, which could boost students' communication skills. Opening the classroom in this way could enable learners to take part in larger scale collaborative projects, either as part of their usual schoolwork or their extracurricular projects, embracing new ways of learning and different cultures.

### **Screen solutions**

The newest technology for the classroom focuses on interactive, collaborative learning, and interactive display screens are the cornerstone of this trend. Interactive learning is effective because it encourages students to take charge of their own learning and forces them to engage in the class more directly than if they were to simply sit, listen, and take notes. Learners can engage directly with lesson content, collaborating on an interactive display to problem solve and

explore topics.

Interactive displays enable students to interact directly with on-screen content, independently or in working groups, thanks to multi-point, touch technology instantly creating a more collaborative environment. The latest touchscreens can facilitate more varied lessons, working seamlessly with a wide range of media types, including text, images, video and music. Students can learn visually and virtually, exploring places and experiences without ever leaving their seats. With the

help of Google Maps, Google Earth, YouTube videos, and a wide range of video resources such as National Geographic, it's possible to bring the world into the classroom – and indeed, with the introduction of VR, we are witnessing an experiential learning revolution.



ABOUT THE AUTHOR Natalie Harris-Briggs is VP of marketing at Avocor (www.avocor.com)

### **FIVE TO TRY**

Here are some of our favourite tools and applications to create a more engaging learning environment:

#### 1. Microsoft OneNote clipper

Add OneNote web clipper to your web browser and instantly save, annotate and organise your web searches, adding digital content to your lesson content to keep minds from wandering.

### 2. Google Earth

Explore the world on a 4K interactive display, choosing from a variety of rich geographical content; from city flybys to diving beneath the surface of the ocean, you can make every subject matter instantly exciting.

#### 3. Kodu Game Lab

Kodu lets users create games on their PC or VBox via a simple visual programming language and is perfect for teaching computing coding. Kodu helps to improve creativity, problem solving, and storytelling skills and has a wide range of resources available on the Kodu website.

#### 4. Microsoft PowerPoint

Use this instantly familiar application to facilitate lateral thinking games and activities. Add answers into the 'notes' section of each slide and use class breaks to enable children to collaborate together at an interactive display to encourage team working.

#### 5. Physamajig

Create physics games and simulations by simply sketching something out and then translating it into a realistic physics object. Add attributes such as friction or joints and then create games by adding behaviours to the object to land a rocket on the moon or destroy critters with a cannon.


## "We want to help you bring the curriculum to life"

**Amanda Soundararaj** wasn't planning a career in construction – and that, she says, is what makes her role as a STEM Ambassador so important...

v journey into STEM has been a bit of a random one. but it's a direction I don't regret taking. If you'd told my younger self that I would one day have a successful career in construction with aviation and would drive the length of both runways at Heathrow, I probably would've laughed at you. Having dedicated my younger life and studies to music, construction wasn't even on my radar. After entering into the world of work, though, I realised that dreams don't just revolve around your career - life goals matter too. Media and the music industry are hard to get into and often slow and congested, with poor pay at the beginning. By contrast, construction is inclusive and offers vast opportunities - with great salaries to boot ---for all skills and levels. By becoming a STEM ambassador I can promote what great opportunities construction can offer young people today, even if it's something they've never considered - because it certainly wasn't what I saw as the career for me at the age of 16.

#### **Real opportunities**

Being a STEM Ambassador is a privilege. Although sometimes it can be challenging, the rewards of interacting with young people, and potentially influencing their future careers and life, are immeasurable. The dilemma for me is how we demonstrate to the millennial child the lifelong benefits and opportunities the construction industry and STEM can offer. Construction may not seem particularly glamorous, but it can offer plenty of job satisfaction. Without construction other industries would not be able to function - you wouldn't have your buildings or places of work; schools, offices, gyms or shopping centres - yet it's an industry with some of the biggest skills gaps. Young people don't always see a career in construction as an option, but my colleagues and I are proof that it is.

Young people today have so many opportunities, but sometimes they just can't see the wood for the trees. Inviting STEM

Ambassadors into schools provides students with real

#### WHAT IS A STEM AMBASSADOR -AND WHY DO YOU NEED ONE?

STEM Ambassadors are people from a range of disciplines and backgrounds, including engineers, designers, architects, scientists and technicians, who represent an important, exciting, and free resource for teachers and others engaging with young people inside and out of the classroom. STEM Learning (stem.org. uk) works with over 30,000 STEM Ambassadors from more than 2,500 different employers. They volunteer their time, enthusiasm and experiences to encourage and inspire young people to progress further in STEM subjects. Through a range of activities, including presentations, mentoring and careers talks, STEM Ambassadors play an essential role in inspiring the next generation with the world of STEM subjects and careers. Why not invite one into your school, and see what changes?

examples of careers and jobs that they may not even have known existed otherwise. We want to help you bring the curriculum to life and to show young people that what they're learning is actually relevant in the 'real world', not just the classroom. Plus, without interacting with STEM Ambassadors how could they know what they could get paid, or what cars they could drive? Interacting with adults, outside of their teachers, who can show them some of the potential exciting opportunities which are on offer in STEM, and construction, is just one small part. Changing young people's perception of construction is my ultimate goal.

## The pursuit of happiness

STEM Ambassadors want to support schools and teachers in achieving the Department of Education's Careers Strategy – our aim is quite simply to help influence young people towards successful careers and happy lives. There is no hidden agenda for us; we just do it for the warm and fuzzy feeling! If we can influence or make a difference in one young person's life and lead them to a successful STEM career, then the time we invest will have been well worth it. You never know, they could even end up like me: a successful woman in construction – or better still, they could be my next director...



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CLASSROOM INSPIRATION

# EDUQ&A

# "Open-source reconfigurable robots inspire learning"

Costas Sisamos, MD and head of STEM research at Engino<sup>®</sup>, discusses the importance of using robotic sets in a classroom setting



#### T&I What needs are shaping the STEM and robotics trend in schools today?

**CS** Design and Technology used to have a tremendous appeal in schools, mostly due to the hands-on and problem-solving approach. Over the years, the whole educational sector has experienced rapid change with more subjects incorporating similar methods and technologies. The inclusion of robotics enhances education while fostering interdisciplinary skills set and engaging students in the process of learning by doing'.

## What type of robots are used in education?

There are three main categories: preassembled robotic devices, DIY robotics and reconfigurable robots. Most examples are useful learning tools for teaching coding and computational thinking but not all support STEM teaching. The first category limits students to pre-set functionalities while the second only uses electronics with consumable materials. However, the third facilitates teaching and boosts engineering skills with a reusable building system that enables several constructions.

#### How did Engino<sup>®</sup> get involved in development of educational robotics?

Our first product for schools was a system of wood-connectors that enabled building efficiently technical models. With years of research and development, the patented **Engino®** building system evolved into an extremely versatile system that enables building several different models with only few different parts. Matching **Engino®** system with electronics and comprehensive teaching resources, teachers can use more efficient pedagogical methods and motivate students to build, experiment, code and learn.

## What are the main advantages of Engino<sup>®</sup> robotic platforms?

Our research focuses on creating STEM teaching tools rather than robots or gadgets. Three aspects of innovation are combined to make **Engino®** products such strong tools: the *building system*, the *programming software* and the *pedagogical material*. These features make interdisciplinary teaching a real possibility, while concepts are taught in detail, through fun and interactive activities that engage and inspire students to learn by doing in STEM principles.

## How about the programming software?

Difficulties that children face when learning to code with all blocky interfaces, led us to develop a special software, KEIRO, that allows parallel programming very easily. It supports programming via simulator window, drag and drop icons, even text language. Our latest platform, PRODUINO, can be programmed via Arduino IDE, so students can gradually move away from blocky interface to C++. A Python editor is now being developed.

## What are the open-source characteristics of Engino<sup>®</sup> robots besides the software?

Teachers want to have freedom in how and what to teach. Therefore, we emphasised developing PRODUINO as a hybrid platform. Teaching younger students requires more structured solutions and PRODUINO seems to be ideal. With Engino®'s advanced controller and peripherals, 32 detailed lesson plans have also been developed to support teaching robotics and STEM. However, the innovation of PRODUINO becomes apparent when students use external Arduino sensors with the same controller and software!

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# Classroom Technology

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#### **Contact Info**

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🖂 Rene.Buhay@aver.com



Earth



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CLASSROOM INSPIRATION



## "Improving education, Aver one classroom at a time"

Rene Buhay, VP- EMEA & APAC describes how AVER solutions are making a difference in over 500,000 classrooms everyday



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**RB** AVer puts students and teachers first! As an award-winning education collaboration solutions provider we are always looking for new ways to improve the entire classroom experience and enrich students' and teachers' lives. By leveraging the power of visual communication we connect students with teachers like never before to achieve earthshaking things. Creating better classrooms is what we do; and why no one is like us.

## How long have you been working in the education sector?

With more than 20 years' experience, AVer has gained the trust of schools across the globe and with solutions in over 500,000 classrooms we are helping schools everywhere realise the classrooms of tomorrow. Our belief that today's technology



determines the brightness of tomorrow ensures our dedication to the highest level of commitment to enhancing learning and innovation in schools across the world.

#### What's special about AVer visualisers?

It's a new way of *visualising*! AVer visualisers are reinventing the day's lesson plan by turning outdated traditional lessons into interactive digital multimedia experiences for students. Teachers can grab their day's material and with an AVer visualizer present unbelievable, crystal clear detail to students on projection screens or a monitor. For DIY STEM educators and learners, AVer visualisers provide exciting teaching and learning experiences every day.

## How do AVer charging trolleys make teachers' lives easier?

Tired of charging your iPads/ tablets/laptops one at a time? Never find enough power sockets to charge your devices in the same spot? Worrying about storing your expensive devices on days off? We get it. Managing classroom devices can be challenging and time consuming; that's why AVer makes charging solutions that are easy to use, efficient, safe, and affordable, so teachers can use them every day.

## What are the benefits of AVer interactive flat panels?

In the modern classroom, engagement is king; sparking curiosity and excitement in young learners, for every day of their education. That's exactly what the AVer IFP is for. Here's how:

A. Connect every student to the front of the class with ScreenShare.

B. Bring everyone's attention to the smallest detail with glass mode annotation.

C. Teach from absolutely anywhere in the classroom with AVer visualiser integration.

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dux plu

for all iPad Pro models

The **dux plus** provides best-in-class protection for your iPad Pro. Along with integrated Apple Pencil Storage the dux plus features a patented magnetic closure, reinforced corners and transparent back panel to protect your iPad from inadvertent drops.

#### **Product Features**

- Built-in storage and protection for the Apple Pencil
- Protective polycarbonate and rubberised bracket
- Durable and water resistant polyurethane cover to ward off occasional drips or spills
- Patented magnetic closure allows for easy folding for typing or viewing

Also available for all iPad models in Black, Blue & Red, including new 2018 iPad.



# Why I Love...



Thierry Delaitre, head of ICT developments, explains how STM is protecting tech investment at the University of Westminster

**Protection is key** With 3,000+ mobile devices rolled out to students and staff since 2014/15, The University of Westminster

truly understands the need to protect its tech investment. Starting with a deployment in the University's Faculty of Science and Technology - where 270 mobile devices were provided to staff in 2014 - the Mobile Learning Project saw a further 2,000 mobile devices rolled out to students in 2015. Due to this successful implementation, 1,000 more student devices were delivered in 2016. At each stage, device protection was a key consideration - saving time and money, and enabling the successful recycling of mobile devices to new students, plus contributing to the sustainability of this project.

#### 66 Crucial design features

The STM Dux case was selected to protect iPads and other mobile devices for staff and students. Not only does the STM Dux's reinforced corners protect the iPad from inadvertent drops, its transparent back cover allows the University asset tag to be visible at all times. Design features like these - plus being insurance approved - have ensured STM remains the de facto choice for device protection at UoW, and an integral part of the Mobile Learning Project.

#### **Tangible measures** Outside of cost, the most significant impact of protecting devices with Dux was the decrease in downtime. While the presence of the FST Helpdesk enables a speedy



replacement iPad in the event a device needs to be repaired, it's the time not lost by students with a broken device that's made the most significant difference. Historically, the majority of damaged devices were due to cracked screens - either by being dropped or lack of protection in standard bags. Since the adoption of STM, device breakages have been less than 0.05%, thanks in no small part to the military-tested protection the Dux can give you against accidental damage.

#### **C**Lifetime protection

In partnership with independent advisors, 4C Strategies, who provided programme management assistance for the university's managed service provision, there was a responsibility to bear in mind for the life of each iPad from an insurance and warranty perspective. Particular attention was given to identify best value for money, but also the long-term protection of the devices.



The hardware protection choice these days is vast, so selecting the most appropriate option can seem like a minefield - and in any teaching environment, broken devices means disrupted classrooms and a loss of valuable teaching time. Once the due diligence was complete, there was no hesitation in choosing the STM Dux as primary choice for protection and ensuring the University of Westminster's Mobile Learning Project was a tremendous success.

#### Get Your 'Dux' in a Row with STM

"Since the adoption of STM, device breakages have been less than 0.05%, thanks in no small part to the militarytested protection"

Thierry Delaitre - head of ICT developments, University of Westminster

For further information, please call 01256 378 690



# *The ultimate* CHALLENGE

At Beaumont Collegiate Academy, making STEM connections outside the classroom is preparing students for a brighter future, says **Chris Hillidge** 

his year I was delighted to judge the Ultimate STEM Challenge final, a national science learning competition for 11-14 year olds held at the Science Museum.

The competition asks students to tackle real-world energy efficiency problems, presenting them with some of science's million-dollar questions: how can we generate electricity with moving water? How can we grow plants indoors while preserving water? How can we generate and capture biomethane from food waste?

While marvelling at the finalists' passion,

enthusiasm and knowledge, I started thinking about another million-dollar question: what does the future of STEM education look like?

#### Tackling the challenge

In my experience, real innovation and engagement lies in amazing STEM opportunities that occur outside the classroom and outside the boundaries of formal education.

I'm not suggesting that all students should be homeschooled – I'd be out of a job! – however I do believe that our future STEM leaders will be inspired by activities and projects that are a little bit different. The



### "Our students can see the value of creativity – as well as the need to be resilient when you face setbacks"

Ultimate STEM Challenge is one example of how that process works in practice.

At my school, Beamont Collegiate Academy in Warrington, we tackled this question a few years ago. Warrington is surrounded by world-leading science and engineering companies, from tiny video game design companies to multinational corporations. However, the local area experiences severe socio-economicdisadvantages and there was no clear path from local schools to local jobs.

We asked ourselves why our students were not able to access the amazing jobs on their doorstep, and we found that many simply didn't have the professional and social connections (i.e. 'science capital') to grease the wheels for work experience, apprenticeships and other valuable opportunities.

Our strategy in response to this challenge was to bring students and teachers together with local STEM professionals, who would act as role for models for learners and provide CPD for teachers. By tapping into cutting-edge STEM developments, we could also return the favour to local companies by building a pipeline of skilled employees.

#### The Warrington FabLab

And so the Warrington FabLab was born. We were in the process of building a new school, so we had an opportunity to think differently and develop inspiring new facilities for the entire community.

The FabLab is a complete design, prototype and manufacturing 'makerspace' full of 3D printers, laser cutters, CNC routers and more. During day-time engineering lessons, students have access to this amazing technology, but the magic really happens after school, when we open our doors to the public. At this point, the FabLab becomes a place where creative people and our students can come together to create amazing things.

For example, currently we have a Bentley design engineer building a one-person electric vehicle: our students have been part of the process from a sketch through to CAD, and now it's a working prototype. We also had a Met Police body armour designer working on female-specific body armour. And in conjunction with Salford University we design 3D-printed prosthetics for children. Our students will meet the child, listen to their needs and develop a solution. It was a privilege for us to make an impact on the life of 18-month-old Eda and her family, who recently visited for her to be fitted with a full arm prosthetic.

First-hand experiences like these are inspiring for students, invaluable for schools and motivating for the businesses involved in the process. Our students can see the value of creativity – as well as the need to be resilient when you face setbacks. This approach to STEM education has helped us to hook students from across the north-west into STEM. If there was ever an example of 'tech for good', this is it!

#### Part of the solution

As an alternative option, national science competitions like the Ultimate STEM Challenge are a great way to ignite enthusiasm for science with extracurricular activities.

The Ultimate STEM Challenge – released annually and available to all UK schools for free - urges students to think creatively, to engage with real-life problems and to be part of the solution. The competition's supporting resources for students and teachers provide enough structure to keep everybody motivated, challenged and thinking independently. The process teaches students about resilience and the need to remain open-minded when faced with new challenges. That positive mentality was brilliantly illustrated by this year's winners, Walton Priory Middle School in



Staffordshire, who tested their energy-efficient waterwheel prototype in a local stream – during the bitterly cold winter months!

For me, as an unrepentant scientist with an eternally inquisitive mind, the correlation between informal STEM activities and success in formal STEM qualifications is already well established. We need to see students thinking across multiple STEM disciplines, developing their knowledge of STEM applications, and coming face-to-face with professional expertise. This all leads to resilience, teamwork, confidence, passion and conviction.

As a school, what more can you do to provide world-class STEM education?



ABOUT THE AUTHOR Chris Hillidge is director of STEM and specialist leader of education for Beamont Collegiate Academy in Warrington. He is also director of Warrington FabLab, a complete design, prototype and manufacturing space where creative people, industries, the public and Beamont Collegiate Academy students can work together to develop their skill sets.

#### TAKE THE CHALLENGE

Aimed at younger secondary school students yet to make their GCSE choices, the Ultimate STEM Challenge is a nationwide schools competition inviting students aged 11-14 to put their STEM skills to the test by tackling realworld problems. To find out how to take part in this year's Ultimate STEM Challenge, visit bp.com/ ultimatestemchallenge. The deadline for submissions is 15 February 2019.





# bp

## Resources update

Celebrate the Year of Engineering with brand new teaching videos and a STEM competition from the BP Educational Service

BP is actively supporting the government's Year of Engineering 2018 campaign with a new set of engineering-based teaching resources from the BP Educational Service. Students aged 11 to 14 will discover the science behind their favourite theme park rides with the brand new Where's the Engineering in that? teaching resources. There are four videos exploring curriculum science at the theme park:

Energy changes and

**transfers** – explores the different types of energy which keep a roller coaster car moving.



**Work done** – explains how to calculate work done and why it is important in real life.

**Moments** – uses the pendulum ride to explain what a moment is and how theme park engineers use moments to make sure the ride is balanced. **Relative motion** – explains why an understanding of relative motion is important when designing dodgem cars.

All of the Where's the Engineering in that? video resources come with supporting PowerPoints, which include questions and activities to test students' understanding.

#### More information

The videos can be accessed on the BP Educational Service website at: bp.com/bpes/energytransfers bp.com/bpes/workdone bp.com/bpes/moments bp.com/bpes/relativemotion



## 展 Elevator PITCH

Take two minutes to find out what **iLockerz** intelligent lockers for education have to offer

#### What are they?

■ iLockerz are electronic lockers that offer a secure location to store and re-charge personal effects and devices for short periods of time. The intelligent systems - accessed using an existing ID card or number - give students secure storage 24 hours a day, and live, web based reporting shows availability and ensures effective use.

#### **2** How do iLockerz enhance the student experience?

They give students a short-term storage location that allows them to leave personal effects in a secure locker. Not only does this improve security, it also means students can get fast access to storage on the move - therefore increasing the time spent on learning.

#### Who does it benefit?

Everyone! Staff have a safe place to store valuable technology/ items at work, and students have a safe place to charge tablets or other devices whilst also securing bags and similar items that are not needed at the time. Lockers can be used as useful charging stations and space-efficient storage for anything from a student's mobile phone to a visitor's rucksack.

## **4** What else does it bring?

The intelligent lockers can be made available to students, visitors or staff on a free-to-use or pay-to-use basis, ultimately increasing revenue. iLockerz can also serve as advertising or notification facilities by programming bespoke messages on the lockers' HD 15-inch screens.

Arrange a demonstration and find out more about how these lockers could help you at: www.ilockerz.com/index.php/market-sectors/education/or email tellmemore@iLockerz.com



iLockerz intelligent locker system for laptop, iPad, tablet and other device storage and charging serve as the ideal location for students and staff to securely re-charge the devices that are critical to effective and enjoyable learning.

Available with a range of locker compartment sizes, a whole host of power/charging options and various methods of user identification - iLockerz are the perfect addition to any library, learning resource centre or shared space.



## CONTACT US: 0121 270 6153

www.iLockerz.com

teachwire.net

## Are they getting THE MESSAGE?

You don't need fancy technology to build parental engagement, argues Marc Doyle - but you do have to use what you've got effectively...

h, parents' evenings; the panacea of parental engagement, where at least one adult turns up for every student, and Johnny-who spends most of his lessons either under the desk, on it, or with it in his hands ready to throw at you – sits like a cherub telling you and his red-faced mum that he is misunderstood, but trying his best. An opportunity for honest conversations to be had about the academic ability of Chelsea in set 4 and the intricacies of her high quality anime graffiti on your whiteboard, coupled with an in-depth and productive discussion about her hairstyle.

Let's be honest – parents' evenings really aren't a great place to engage the most difficult to reach families. In reality, rarely do the ones you need to see

(ref. Johnny and Chelsea) turn up, 100% attendance is a pipedream, and as a teacher vou often leave completely parched (not enough finances in schools to afford regular water nowadays) and wondering what you actually achieved. Quentin and Aphrodite's parents, who were there five minutes ahead of their appointed time, are already satisfied their offspring are doing well: they would certainly already have let you know if anything was amiss.

#### **Regular contact**

It's long been my view that the way to engage parents isn't to have a twice-yearly five minute conversation that gains very little, but rather, to ensure that families are kept informed of their child's progress and wellbeing on a far more regular basis. Not that parents' evenings are completely pointless, but it just isn't enough to have a truly positive and long lasting effect on students if you don't triangulate between school, home and child.

At the Engineering UTC Northern Lincolnshire, a school for 14-19 year olds specialising in, you guessed it, engineering, we are passionate about developing positive relationships with all of our stakeholders and that means parents in particular. Our culture is one of 'putting students to the front of the queue for jobs, apprenticeships and university places' and without the support of families in that, it would be a lot more difficult.

Parents

teachwire.net

are a kev

feature in my first meeting of every half-term with staff, and the weekly email I send to them has a common theme - whatever you do, don't forget the parents! In fact. I go further than that. telling them that if they are having a challenging conversation with a student, then they should imagine their mum, dad or carer is standing at their shoulder. It certainly makes them think about the tone they use!

#### Instant responses

We definitely make use of technology for parental engagement, although I would call our approach

<sup>†</sup>There seems little point to me in giving students letters to take home"

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#### 5 TIPS FOR BETTER HOME/ SCHOOL COMMUNICATION

+ Whilst parents' evenings are not defunct, they will never be the best way to engage with families. Do you really need to have that many?

+ Regular, dialogue with parents is crucial – get their email addresses and start using them, but make sure messages are carefully coordinated or they will get annoyed.

+ The difficult conversations are far easier if you've already established a strong relationship. Over a term, you could have friendly email or telephone conversations with the parents from most of your classes.

+ Email use can be dangerous if you are not careful. Get someone to check what you about to send if you aren't sure. Its difficult to recall an email that has been sent at the end of a busy and stressful day

+ Parents love positive news. Make time to pick out some great experiences or fantastic test results, and share them.

particularly 'high-tech'. It's more about a coordinated culture of the use of email, social media and the good old computer in our pocket, the iPhone (other smartphones are available...).

So what do we do? Well, we have all of the parents' email addresses and we encourage them to follow us on Twitter, Instagram and Facebook. As principal, I send out regular information to parents via email and social media, as this 'state of

the nation' approach keeps them in touch with what is happening every day and helps me to mould the vision. In a world where technology is at the heart of what we do, there seems little point to me in giving students letters to take home. Do they ever really get there? Staff send positive emails to parents every week, messages are given about individual successes, and issues are ironed out. I have asked staff to dedicate at least half an

hour of their week to make pleasant phone calls home, congratulatory emails and reports of success.

As part of our reporting cycle, we use the data tool SMID (www.smidreport. com), and rather than sending home a complex report that most don't understand, we use emails to have a dialogue with parents about progress. The culture is one of sharing information in a timely manner. Snow day? It's no problem for us – we are able to get a pack of work out to every student ten seconds after the first flake hits the ground. We have an instant link to parents, whatever the situation. It doesn't mean we don't have face to face conversations, but when we do there is already a relationship.

#### Part of the culture

The potential pitfalls of using this approach are obvious. Whilst parents love getting positive emails, they don't like being inundated (for evidence, see GDPR emails, May 2018!). I would always suggest that your strategy has to be coordinated and understood by everyone in the organisation. Weekly positive emails to individual parents, yes-weekly progress reports out of the school's reporting cycle, no. It's important that the right people are giving the right messages, so I have that written into SLT job descriptions.

We think our school is good at coordinating its approach with parents, and they agree. Indeed, in a recent survey, 96% of them said that they were happy with the information that we are giving. Not only is it relevant, but often it is instant. Your own communications strategy doesn't have to be complicated, but it must be part of the culture of the school to succeed. After all, every classroom has a Johnny and a Chelsea - as well as 28 equally imprtant individuals with their own strengths, weaknesses and needs; and without dialogue there will never be progress.



ABOUT THE AUTHOR Marc Doyle is principal of Engineering UTC, Northern Lincolnshire





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Mrs T - Guardian of Casey, 16, from Sheffield



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# Resources update

The revision method that really works: repeated and spaced practice throughout

Collins GCSE 9-1 Computer Science revision and practice books are based on a 'repeated and spaced practice' approach.

Research proves that, compared to other revision methods, this has the most impact on exam results. When information is broken up into a number of short sessions and spaced out, the repetition of the learning point after a period of time helps students to remember it better long term. The increasingly wider spacing is important, as it requires the learner to use more effort to retrieve the information each time.



A SUCCINCT OVERVIEW Collins GCSE 9-1 Computer Science gives students a succinct overview of the complete course.

The book includes the following sections to really help students follow this method with ease: Revise (the revision content broken down into topics); Practise (exam-style questions linked to the revision topic); Review (a chance to revisit questions linked to previous topics covered); and Mix-it-up (a mix of exam-style questions from various topics covered in the revision sections). There is also a full Workbook, offering further exam-style practice covering all topics and a Practice paper so that students can try an exam-style paper.

Teachers can visit **collins.co.uk/revision** to find out more about this approach.

The best revision at the best price: Collins All-in-One revision and practice books give students everything they need in one place for only £3.99.

#### More information

Find out more at: collins.co.uk/revision



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# SCHOOL SOLUTIONS

Innovations that reach into every learning space

#### **EVIDENCE IN EDTECH**

The use of evidence in EdTech is growing. Initiatives like EDUCATE. which support EdTech organisations to use evidence and work with practitioners, are helping to bring evidence to the mainstream. There is pressure from teachers who want to know whether technology is likely to be effective, and a fast growing evidence informed education sector is encouraging more EdTech companies to seek out better standards of evidence.

However, there are still many challenges. The **Education Endowment** Foundation, a leader in rigorous evidence for education, has a very high bar when it comes to research and many EdTech products are not ready for this level of testing. Lighter touch evaluation, not necessarily showing impact, but instead to improve the design of the product, is more common.

#### **Teacher feedback**

A key form of evidence used by many EdTech companies and sought after by schools is teacher feedback. Although not a rigorous form of evidence, this can be really helpful to design better products and to help teachers see what has worked elsewhere. A recent BESA report found that teachers are the most valued source when it comes to measuring the effectiveness of EdTech. 44% of respondents from primary schools said they most value recommendations from teachers in their school, as did 36% of secondary school respondents.

#### A space to share

Currently, there is no 'test bed' of schools to try out new technologies and share what they have found with other schools. We are working to develop an online marketplace, Rocket Fund, so teachers can share reviews of technology they have used, suppliers can showcase their products, and schools can crowdfund from their local

businesses and community to buy them. Better peerto-peer sharing about technology won't solve the problem of gathering rigorous impact evidence, but it would help teachers navigate an often confusing sector.



By Nancy Wilkinson, programme manager, education, Nesta



of parents with primary school aged children believe their child would enjoy a career in a tech role when they grow up.

Source: e2save

#### **READING LIST: T&I RECOMMENDS...**



Teaching Computing in Secondary Schools (William Lau, Routledge, £19.99)

This book offers useful and very detailed advice on all aspects of teaching computing - covering planning, delivery, and leadership and management. While the author is an experienced teacher and subject leader, what is striking is the extent to which his suggestions are grounded in

academic research. Starting from the broad overview of the Programme of Study for computing, it then looks at a possible five-year scheme of work and delves right down into the detail of lesson planning. Assuming you know your computing stuff, this book will certainly help you teach it. The leadership

section contains good advice on both personal leadership and leading others. It's a shame the author has dismissed the teaching of ICT as largely concerned with office applications, which was less true than some suggest. But it's a good read in spite of that.

Reviewed by Terry Freedman

# A platform for **SUCCESS**

Finding the right LMS has transformed learning at the West Bridgford School, as deputy head teacher **Mark Deans** explains...



t the West Bridgford School (WBS), we have consistently proven ourselves to be a high-performing academic school, with results regularly placing us amongst the bestperforming non-selective, state-funded schools in the country, both at GCSE and A-level.

The school became an academy in 2011, followed by its conversion to a multi-academy trust three years later. We like to set ourselves apart from other schools, with our continued focus on innovation, analytics and ensuring everyone is reaching their full potential. Indeed, our desire to enhance the learning experience is reflected in our recent approach to technology, particularly our Learning Management System (LMS).

#### Improved engagement

At WBS, we are lucky to have bright, enthusiastic staff, supportive parents, and motivated students who are keen to learn and do well. Our teachers are well supported by associate staff, to ensure students fulfil and exceed their potential, and grasp the opportunities afforded to them. As such, we recognise that technology is an integral part of teaching and learning, and if we fail to use it effectively, we may do our 1,600 students a disservice.

Three years ago, we reassessed our current LMS and found that we were using too many different tools that were very high maintenance, extremely rigid and required multiple clicks and logins for access, which led to low usage rates. In fact, at one point we reported that only 10 percent of students were logging in a few times a week to some of our platforms. We needed to consolidate our tools into one modern, flexible and easy-to-use LMS.

The students of today have every part of their life immersed in the most upto-date technology, so it is only natural that their school life should also provide the sophisticated and personal experience they're used to. Indeed, they very quickly lose interest with slow, highmaintenance platforms that appear out of date, therefore we knew it was important to have a modern platform that would inspire both students and teachers.

D2L's Brightspace has enabled us to create a truly personalised learning experience for each student, which has transformed how they learn. It feels modern for our digital learners and

#### FOUR STEPS TO GREAT TECH INVESTMENT

+ Don't try to run before you can walk – invest in technology at a pace that considers your budgets, staff workload and end goals

+ Listen to the staff and students. Getting feedback on what they want is crucial when making decisions on what technology to implement and how to implement it

+ Any technology that is aimed at students and parents must work superbly on mobile and tablet. If it doesn't, it probably isn't worth having

+ Many schools had their fingers burnt the first time they invested heavily in learning technology, as did the firms involved. The new generation of solutions are a lot better and many have a very real impact on learning. Investment can pay dividends.

it's cloud-based, so we don't have to worry about keeping the lights on.

In particular, the gradebook functionality has been very successful. Formulas have been created that allow us to track each student's assessment grade against their previous and predicted grades. These tracking abilities ensures every student is getting the attention and help they require to realise their full potential.

## Mobile and video learning

With smartphones and tablets increasingly being brought our classrooms, we also knew we needed a more mobile first ethos. After conducting an internal survey in which we asked students how much they relied on their mobile devices it became clear that mobile is – whether we like it or not – how today's students consume information. The family PC in the corner of the lounge no longer exists; instead, students are pulling their phones out of their pockets to access materials on the go.

The platforms we were previously using did not have the capabilities to display on a tablet or phone in a user friendly and adaptive fashion. The fact is, however, if a tool does not look or feel good on their latest iPhone, students

will let their frustrations be heard – whether it's vocally, online or via social media. More importantly, an unresponsive tool fails to engage them, which, in my opinion, is the worst possible outcome when investing in technology. With this LMS, teachers don't have to worry about inputting mobile versions of their content. The platform is slick, modern and fast, which means both our students and teachers are continually happy.

We are also seeing the use of video rising dramatically in the classroom. Proven to be an engaging format for students, many of them turn to YouTube when they want to learn something new. For example, a difficult maths question may be easier to digest with short, bite-sized video tutorials instead of a one-time, in-person session. It provides both students and teachers with the visibility that traditional learning tools usually lack. In Brightspace, YouTube videos can be embedded inside the platform. which not only makes it easier for the student to access, but it gives us, the teachers, greater control over what is being viewed. We can track student engagement right down to the average time spent

### "We're continually looking to innovate"

viewing the content, which can be stored and analysed alongside assessment and participation data.

#### Visualising the journey

One of the biggest benefits of the LMS is that it gives our students a visual representation of their learning journey. Whilst text and exercise books are by no means obsolete, with Brightspace students are now able to easily upload work, teachers can grade work online with written and verbal feedback via voice recording, and student/teacher discussions can take place on forums, all within the one LMS. Students can see a narrative growing over time that enables them to identify how, when and in what areas they are improving or, indeed, need to improve.

At WBS, we also fully recognise the value of parental engagement and the importance of engaging and inspiring parents to help foster a strong schoolto-home relationship. Today's parents are relatively tech savvy so, like our students, expect a high standard of service. Through the parent portal, they can access their child's portfolio of work, and teachers' grades and feedback, allowing them to be involved in their child's education journey and be a fully integrated member of our community with little or no burden to our teachers.

SCHOOL SOLUTIONS

Our approach to technology has evolved significantly over the last few years and we are thrilled with how this LMS is transforming the learning experience for the better. It's taken a while to work out our vision. but we are seeing positive results, and we're proud that we are regarded as a school that is continually looking to innovate, explore and implement exciting educational practices.



ABOUT THE AUTHOR Mark Deans is deputy headteacher at The West Bridgford School.

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# *Powerful* CONNECTIONS

At Horsforth School, understanding students' attitudes to learning is unlocking potential across the board...

(ISTO)

HELLO



"This has been so effective as it stops students revising what they already know well and gets them to focus on the areas they actually need to improve" Dr Paul Bell, head teacher

(ISTO)

barriers to address before

an impact, and who need

high ATL scores and high

+ Students with low ATL

scores and high P8 scores.

+ Those with high ATL

scores yet low P8 scores;

pastoral support.

P8 scores.

+ Students who have

academic support will have

t Horsforth School in West Yorkshire everyone believes firmly in opportunity and achievement for all, and the aim is to provide an education that equips each student with the confidence, competence, knowledge, skills and understanding required to fit easily and actively into a rapidly changing society. So, in order to fully understand the academic needs of their students, the leadership team developed a strategy that joins academic and pastoral data together to better identify - and meet those needs.

First, they began by dividing the students into four groups, looking at each young person's willingness to learn (ATL) and the progress they make:

Diagnosis Low Effort<sup>B</sup> and High P8 <u>0 1 2</u> <u>0 1 2</u> <u>1 2</u> <u>2 3</u> <u>4 5</u> Effort <u>and High P8</u> <u>5 Krone Correlation</u> <u>2 4</u> <u>4 5</u> <u>5 Krone Correlation</u> <u>2 4</u> <u>4 5</u> <u>6 Ffort</u> <u>4 6</u> <u>5 Krone Correlation</u> <u>2 4</u> <u>5 Krone Correlation</u> <u>5 Krone Correl</u> the HELPS – these students often 'slip through the net'. This strategy, pioneered by Horsforth, has been adopted by PiXL (see panel) and named the Horsforth Quadrant; the school uses GCSEPod as a key part of its implementation.

1 1

#### **HELP** at hand

Diagnose Therapy and Testing (DTT), is a fundamental PiXL initiative in improving student outcomes by demonstrating where students have insecurities and how they can treat these. Using GCSEPod, the process works as follows:

- + Student identifies area of weakness
- + Student choses Pods to watch as therapy
- + Student writes five questions for a teacher (or parent) to test them on

+ Alternatively, teachers can collate therapy across all students in class and create an assignment on GCSEPod Whilst GCSEPod is a school wide resource and is taken up by students of all abilities with a wide range of attitudes to learning. Horsforth has made a deliberate effort to increase its usage amongst one particular target group of students - the HELPS. "Our HELP students have been a key focus for us this academic year," confirms Dr Paul Bell, head teacher at the school. "We recognise that they are a group of students for whom targeted intervention can make a huge difference. They are committed learners: we know they are up for it, but are likely to need some support in ensuring they are focusing on the right things in the right way. They need

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NOW PLAYING

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44

WY PLAYLISTS

58

firmly in tunity and achievement l, and the aim is to de an education that s each student with the lence, competence, ledge, skills and restanding required to sily and actively into idly changing society. order to fully restand the academic to Learning (ATL) scores, who often have other

#### PIXL - WHAT'S IT ALL ABOUT?

PiXL (Partners in Excellence) is a not-for-profit partnership of over 1,600 secondary schools, 500 sixth forms, 600 primary schools, and 75 providers of alternative education. Their purpose is to share best practice to raise standards and to give students a better future and brighter hope.

Founded by Sir John Rowling, PiXL emerged in 2005 from the school improvement programme, the London Challenge. When government funding for the initiative ceased, the 50 member schools at that time decided voluntarily to continue with its model of collaboration around leadership and shared resources. PiXL has since grown to become the largest network of schools in England and Wales.

With a focus on Key Stages 2, 4 and 5, each of PiXL's tailored programmes provides a wealth of classroom strategies and resources and brings school leaders and specialists together at regular conferences to share ideas and support.

It's not just academic excellence that PiXL supports. In 2014, PiXL launched its character development programme, The Edge, designed to empower students with the attitudes and attributes essential for employability and life. In 2017, PiXL launched the Them and Us project to develop cultures in school and society centred around understanding, kindness and respect. For further information contact Rachel@Pixl.org.uk

guidance, which will likely yield a dramatic improvement in results."

#### **Perfect therapy**

Another key component of the Horsforth Quadrant is the Smith Proforma from PiXL, which is about creating Personalised Learning Checklists (PLCs). This ensures staff and learners understand students' insecurities. With the Smith Proforma, pupils can clearly see their secure and insecure areas following an assessment; and it encourages a collaboration between parents, students and teachers.

The benefit of using GCSEPod is that a bespoke playlist can be created to mirror the PLC. These playlists can be edited at any time and so you can update them to add and remove topics as the student progresses. Boost playlists are created upon the completion of an assignment; this is a fantastic tool for PLC and Smith Proforma as it completes the assessment for you, and the students automatically receive their playlists.

"This has been so effective as it stops students revising what they already know well and gets them to focus





on the areas they actually need to improve," observes Paul. "We devised a very specific plan of action for our HELPS and have found that GCSEPod combined with some of our other PiXL strategies have been an instrumental part of our exam preparation. Using DTT alongside the Smith Pro-forma we assigned a 'Director of Revisiting' (LT mentor) for key HELP students, or small groups of students. The mentor creates a personalised structured revision schedule and then meets with each student or group of students every week to monitor progress.

"As we had anticipated, this target group of students welcomed the intervention and followed the advice and guidance they were given to the letter. Not surprisingly, we saw a significant increase in Pod usage amongst them, as we were able to use the content to easily identify their knowledge gaps, then direct them to specific Pods to fill the voids and re-test their knowledge.

GCSEPod provided them with the perfect 'therapy' to support PiXL's DTT strategy across each of their exam subjects."

#### A popular solution

"We are quietly confident that our targeted intervention will yield positive results for this group of students," says Paul. "Looking at our progress data for last year we can see there is a clear correlation with progress and the number of hours a student uses GCSEPod. Students who used it for as little as 25 hours in total scored an average Progress 8 of +0.52 - and the greaterthe hours they used it, the more this figure increased.

"Feedback from students about GCSEPod has been very positive. They love how it can be accessed via their phones; and the short, concise pods encourage a 'little and often' approach to learning, which we now know is the most effective way to retain knowledge. Armed with this understanding, plus the compelling impact data, we knew it could make all the difference to our HELP students. Parents love it too. All they want is to help their children, so having an 'expert online' has been a really positive support for them now qualifications are getting tougher. As a result, GCSEPod has become a key part of our intervention strategy."

gcsepod.com

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# Trusted by 300,000 users to impact results

GCSEPod has developed hugely since its beginnings in 2010 as an independent learning and revision tool. This evolution has been catalysed by the changing pressures facing schools: time-strapped teachers, slashed budgets, tougher linear examinations and higher expectations. Not only has GCSEPod adapted to changes in the UK, it has expanded into 30 countries and is trusted by a 300,000 strong user community in 1,300 schools worldwide.

"With our Pupil Premium students, the best users over the whole year achieved 27% more (+10.1) Attainment 8 points on average than the lowest users."

Peter Myers Director - Poole High School



# "It's the best money we've ever spent"



Discover how GCSEPod could build confidence and deliver impact for your students

A pupil premium student at St Paul's Catholic School in Leicester is looking to her summer GCSE examinations with optimism, thanks to GCSEPod.

The school, a Catholic comprehensive for students age 11-18, located in the suburbs of Leicester city centre, subscribed to GCSEPod late on in 2017. They rolled out the resource immediately to their Year 11 students to provide additional support for their pending mock examinations.

Within days of launch most of the Year 11 students had logged on and started to download and stream podcasts to their mobile devices. However, having been purchased as a Pupil Premium resource first and foremost, the school worked more closely with all of its Pupil Premium students. They ensured that not only had they logged on but they fully understood the benefits it could offer to them and were confident in using it.

#### From 1 to 6

While usage across the board at St Paul's has been amongst some of the highest in the country, it is the usage of one of the school's Year 11 PPG students that has particularly grabbed the attention of the school's GCSEPod lead and assistant head Nora Ward.

"In my role I work closely with all our Pupil Premium students," explains Nora. "One young girl was particularly high on my radar as we just knew she wasn't fulfilling her full potential. With a difficult home life, her poor attendance was falling well below an acceptable level. She completed her Year 10 mocks and despite being capable of grades 5 and 6s, she achieved only 1s and 2s.

We knew we needed to provide additional support to get her grades back on track. both for her benefit and the overall school P8 measure. Whilst we recognised the barriers to fulfilling her

potential we needed to find a different way to engage with her.

"I was confident that GCSEPod might just be the answer for her. She could use it

outside of school quickly and easily on her phone as the resource is very intuitive and very much like some of the popular content sharing sites she was already familiar with. After installing it on her phone, I set her a few personal challenges to see if this would encourage her to familiarise herself with it and perhaps whet her appetite for more.

To our amazement she quite quickly became one of the top users in school, winning the GCSEPod pin, which she wore with pride, and earning privileges such as a fast track in the lunchtime queue. Within just a few weeks after she started to use GCSEPod, she sat her Year 11 mock exams. As I sat and marked her English mock paper, I could not believe what I was reading, it was quite literally the best thing I had ever seen her write. From a hugely disappointing grade 1 less than 6 months earlier, she scored a comfortable grade 6.'



#### **Time saving**

Not only has her English Language improved, this young student is now on track with all her subjects and strongly believes her usage of GCSEPod has made the difference. She says she just listened to the podcasts on her phone as often as she could and went in to exams and wrote down everything that she remembered.

Nora adds: "GCSEPod has provided her with a structure for learning outside of the school environment which is something she has never had before. This has helped to instill a confidence and belief in her that she can do it. In her mock exams she was able to recall the information that she had learnt through the podcasts and apply her knowledge to answer the questions thoroughly.

"In terms of supporting our pupil premium students across the board, we are easily able to evidence impact, and I can honestly say GCSEPod really is the best money we've ever spent.'



To find out more, visit www.gcsepod.com



# How to stop CYBERBULLYING - before it starts

Online intimidation can often stay hidden – until it reaches a crisis point. **Dr Christian Jessen** has some advice to help teachers stay on top of the issue...

rowing up is never easy especially for kids today, who are often having to do it whilst watching and being watched by the whole world, all the time. I wrote my new book for children as a guide to the online environment: how to navigate it safely, what the risks of being on social media are, and what to do if aspects of it give rise to problems. People can behave very differently when they are communicating via a screen, and in an unexpected manner. The more you, as teachers, know about how your students are interacting online, the better equipped you'll be to help them to stay safe and happy in their lives, both on- and offline.

### What are we talking about?

**Cyberbullying** is the use of digital platforms to exclude, threaten, harass or embarrass somebody.

There really is a wealth of ways in which this can happen. For example, **Snapchat**. A lot of parents, teachers and kids think that Snapchat conversations are completely private. But they're not. The conversations can be screenshotted and shared, the images being sent round at school and/or online. This

### "Let's get kids speaking out, and gathering real-life support"

#### **5 USEFUL ORGANISATIONS**

CHILD EXPLOITATION AND ONLINE PROTECTION COMMAND (CEOP)

If you are worried about online abuse or the way someone has been communicating online, make a report to CEOP. ceop.police.uk/safety-centre

#### **DITCH THE LABEL**

Check out Ditch the Label for help and advice on bullying and cyberbullying. ditchthelabel.org

#### MIND

This is a mental health charity, with tons of useful information online. **mind.org.uk** 

#### 

Use this website to find a contact number for your neighbourhood police team. **police.uk** 

#### YOUNGMINDS

A charity helping young people to improve their mental health. youngminds.org.uk

is a complete violation of trust and friendship so can be incredibly upsetting for the victim. **Instagram** is another example – a 2017 study undertaken by the anti-bullying charity Ditch the Label showed that 7% of young people said they have been bullied on the app. I'm not on Instagram because I don't like the idea of posting pictures and comparing your life against someone else's. For me this triggers many of my own issues and insecurities.

**Trolling** is another issue. A troll is someone who posts nasty things (could be comments or photos) on social media accounts (even sometimes hacking other peoples' accounts and posting as them) purely to cause upset or provoke arguments. Social media is great when friendships are working well, but it can make an individual feel verv isolated and alone if they are being targeted in unkind or abusive ways. And of course trolls can attack by text and email too – it's not just social media where a pupil may be targeted.

And then there's the relatively recent development that is **doxing**. This is when someone finds out personal information about someone else – such as their real name, date of birth, phone number, address or pictures - and publishes it online to do them harm. But this is not a crime; unfortunately, if the information gathered by the doxer is freely available and they are not using this information to blackmail an individual, then doxing is not illegal. This is where parents and teachers really need to encourage young

people to keep personal information private.

#### How can we help?

• Collect evidence Encourage pupils to take a screenshot of bullying behaviour when they see it online, whether it's targeting them, or someone else. This can be used as evidence if the situation grows to the extent where it needs to be reported to the authorities. Keeping a log of cyberbullying behaviours is also helpful – for you, and your students.

#### Report it

Bullying should be reported both on the social media platform being used and, if you're worried for a student's safety or mental health, to their parents. But tempting as it is, discourage young people from calling out bullying behaviour in an open forum. This could make matters trickier and even make them a target.

#### Support each other

Encouraging children to look for help offline is a way of combating cyberbullying. Friends can send each other supportive messages and offer a friendly ear in real life. Bullying can make people feel alone. Letting the victim know that people have seen what is happening to them and don't think it's right will do a lot to make them feel less isolated. Encourage your students to talk to a friend and to adults about what is happening. Bullying is never deserved and it's never okay. Let's get kids speaking out, and gathering real-life support.

## Sympathise rather than solve

When a student is ready to talk, really listen to what they're saying. Don't immediately try to fix it, offer explanations or compare it to situations that have happened in your own life. Ask questions such as: 'How does this make you feel?', 'How often does this happen?', 'What would you like to be done about it?'

#### Teach about digital footprints

It's really important to remind young people that everything they post online, every email they send, the websites they visit – this info is all permanent. Encourage them to try and keep a clean slate, by deleting any tags or comments on their posts that they don't like, and really thinking ahead about whether something they post or send could be considered offensive, even if that isn't the intention.

#### Promote privacy

All social media accounts should be kept private. Everyone (not just young people!) should investigate the privacy settings on their accounts and set them so that only trusted people can see them. Passwords should never be given out to anyone except parents. And block, block, block: if someone is behaving in a way a child doesn't like, or always disrupting their posts, or tagging them in things they don't want to be tagged in. these bullies should be blocked.

#### Be ready to find help

It's great when a student trusts you and is ready to open up to you, but it can be overwhelming. If you are worried your pupil is in danger or are concerned that this is affecting their behaviour and mental health, reach out. A member of the SLT should be able to offer you guidance on how to deal with the problem, and there are many external organisations that can help point to support and solutions (see panel).

And of course the flipside. There's the student who doesn't realise that what they're doing is cyberbullying – they probably think that they've sent a friend a joke and haven't realised that person is really offended and/or upset by what has been said. The only solution to this is education – getting the kids comfortable talking about how they live their online lives and creating awareness for them to understand that their actions in real life and online have consequences. The sooner they can own their behaviours and learn to listen to the concerns of others, then the better they'll be able to make amends and behave acceptably

online.



THE AUTHOR Dr Christian Jessen is a doctor, television presenter, and author. His lastest book, Dr Christian's Guide to Growing Up Online is out now (published by Scholastic).





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## "Not all screen software is created equal!"



Carl Sheen, head of product development and training at Genee World, discusses choosing the right screen for your classroom...

## T&I What makes a classroom screen 'the right' choice?

**CS** All classroom screens are aiming to do the same job: display crystal clear content and allow teachers and students to interact with it via touch. The major differences come in the provided software. This software unlocks the capabilities for these screens to truly transform classrooms. Schools need to consider the cost, compatibility, capabilities and ease of use of their software solutions. Not all screen software is created equal!

## So what software does a Genee screen come with?

Genee provides two pieces of software with every screen as standard to fulfil different roles within the classroom. Spark II is our whiteboarding software and is the default tool for lesson delivery for people familiar with tools such as Smart Notebook or Promethean ActivInspire. Teachers also get a 12-month subscription to ProjectFlow, Genee's revolutionary solution to multi-device lesson delivery; both work seamlessly with our touchscreens.

#### What makes Spark II stand out from other whiteboard software?

Spark II's main advantages to teachers are flexibility, ease of use and power. Flexibility is key for modern lessons and Spark II allows your lesson to evolve and grow as it develops. Spark II is simple, no feature is more than two taps away. Spark II has the power, tools and features to enhance lessons for teachers of all subjects and levels even including specific toolsets for maths, chemistry and biology.

#### So where does ProjectFlow fit in?

ProjectFlow is a cloud-based piece of software designed to aid a teacher in delivering a lesson to students working on computing devices, whether that is



PCs, laptops, tablets, Chromebooks or iPads. ProjectFlow also allows the teacher to deliver a lesson from a mobile device and directing pupils and the main display whilst moving around the room.

## How does ProjectFlow benefit teaching and learning?

Automatic differentiation is the killer feature teachers have been crying out for; with one press of a button during the lesson every student can have the correct content displayed on their screen seamlessly. Teachers can also perform assessments and polls with instantaneous progress and results. Two-way recorded conversations are possible for instant feedback, student responses and student questions for the teacher. All of this in a simple, easy to learn package with an ever growing library of readymade lessons.

#### How easy do teachers and students find it to use these systems?

These systems are designed to be simple for anyone to pick up and use instantly. Students being the technological marvels they are always jump straight in, explore the features and are amazing their teachers and peers in no time. Teachers grasp the basics quickly and grow their skillset in very short order. This software has been designed, tested and refined by real teachers with real classroom experience, and is based on the feedback of thousands of teachers.

## Is there any support in place for schools to take advantage of these features?

At Genee we are very proud of the training we provide. We have a team of former teachers who provide both onsite and webinar sessions anywhere in the UK (and occasionally further afield). All customers have unlimited access to Get Going webinar sessions to learn the basics, ideal for teachers who lack confidence to explore technology. This can be augmented by onsite sessions that explore the full capabilities of the software.



For further information, visit geneeworld.com/education, call 01902 390878 or email enquires@geneeworld.com

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Model image 1.png

Model image 2.png

SCHOOL SOLUTIONS





Nearly a third of all schools in England now use CPOMS to help underpin their safeguarding recording and monitoring. While most of those schools benefit from a child protection point of view, increasingly schools are using the system now to log other related pastoral issues and beyond. Medical issues, Health and Safety records, SEN and Attendance logs are now being logged with a few simple customisations to the system, so that schools can save money and improve pastoral monitoring as a whole.

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#### A FLEXIBLE SOLUTION

For schools who use CPOMS already, you can adapt the system within a few minutes to make it able to log the above concerns and literally any category of information that will help save you time and improve your record keeping. As the system is so easily adaptable within your own Admin section, there are no additional costs or waiting times if you're looking to implement new categories. You can alter the Admin section yourself, or contact the CPOMS ServicePoint team who are notorious for their high quality and speedy support. Strong privacy settings mean you can log more varied information on CPOMS, but still ensure only the designated safeguard staff have access to safeguarding information.

#### More information



To find out more, visit www.cpoms.co.uk, or email Servicepoint@cpoms.co.uk



## We need to talk about PARENTAL ENGAGEMENT

Technology can help brilliant conversations happen between home and school, says **Geoff Jones** - so what's stopping you?

t's 2018. Schools don't need to be persuaded about the need for parental engagement. It's a given, right? Research studies and Ofsted reports clearly show that parents' involvement in their offsprings' education makes a huge difference to their academic success. And we're not just talking about helping at the summer bake sale, here. We're talking about an ongoing, rich, active involvement in their child's schooling, which has the best outcomes for both the student and the school.

But, no matter how hard schools may try, some parents remain uninvolved.

#### **Modern families**

For busy mums, dads and carers, reading a weekly newsletter (crumpled up at the bottom of the bag), filling in consent forms, and checking homework are just more things to fit in to an already jam-packed schedule – made worse with multiple children. Just teasing out even the smallest detail from the young people themselves about their day can be impossible. It is exhausting!

Times have changed. The stereotypical 'stay at home mum while dad's in work', who can be instantly available for every stay and play session, assembly or fundraiser doesn't exist anymore. Busy, working parents find it hard to ask their boss for time off to drive through rush hour traffic to get to the school and fight over parking spaces outside with other equally frustrated, annoyed or apathetic parents. Then they're supposed to join the mass of bodies queuing at the assembly

hall, and wait patiently for the perfectly groomed prefect to find their name printed in a barely legible-sized font on their attendance sheets, before ushering them inside for their 4.45pm appointment (which is the parents' evening way of saying, 'Join the queue... first come, first seen!').

Surely there's a better way than this? In this world of digital technology, with phones, FaceTime, Skype and social media, there must be a more effective way of engaging with busy parents, working parents, single parents, non-English speaking parents...

#### **Future vision**

Imagine a world where your school's parents' evening offers appointments via Skype, so parents who can't find childcare, or have to work late, are still able to speak to their youngsters' teachers from home, from their office, or even on the train. Imagine the weekly paper newsletter being delivered by the head as a video on your school's app, or class assemblies being streamed via a secure webinar (so parents are not overwhelmed with guilt for not being able to take that half an hour off in the middle of the morning). Schools have to move with the times. The shape of modern parenting is changing - so traditional approaches to parental engagement need to change too. Engaging parents has to go beyond the confines of the school walls, and families need to know they don't have to wait for the next parents' evening to be involved in their child's schooling.

So, how can schools use technology to start real conversations with families? Here are five suggestions:

#### 1. We live in a mobile world. Use it.

In today's world of mobile apps, communication is easier than ever before. Schools need a way of reaching parents quickly, easily and consistently. That is why whole-school communication and social media and apps. This will produce greater take-up than if you try something completely radical and new, which will immediately disengage hard to reach parents. Keep it simple. Look at switching your content from the old-school paper method, to recording content on video (like the weekly newsletter, round up of achievements, the launch of a new initiative in school). Think about how you can make staff and the leadership team at school more accessible digitally, whether it be teacher appointments via Skype, or a live chat option on your website.

#### 3. Don't just broadcast. Listen, too.

Engagement by definition is two-way, so as much as schools have a duty to keep parents informed, giving them the opportunity to respond, or initiate involvement, is equally important. Schools need to get out of a 9-3.30pm with digital approaches it's important to consider those especially hard to reach parents. For example, make sure you are using simple language, in plain English as much of the assessment and progress-related educational jargon can be alienating for parents. Think of the tone in your digital communications, too – is it positive and does it encourage participation? A small step, such as a hard to reach parent receiving a text to say their child has been given a certificate for good behaviour, can begin change. If your school uses online payments, look at methods available via your app, such as Paypal, or PayPoint. And for those parents who have not registered for any digital communications, arrange drop in sessions at school pick up, where staff can help them register there and then.

#### 5. Incentives can work a treat!

If you are trying to engage parents to participate

in surveys, events, take up of online payments, downloading your school's app and so on, offering an incentive – such as vouchers for school uniform, or for Amazon – can be really effective.

All in all, when it comes to parental engagement in 2018 and beyond, the end of term report for some schools might say, 'could do better'; using technology as part of your school's overall strategy for improving this could make all the difference.



ABOUT THE AUTHOR Geoff is Marketing Director for IRIS Education, which provides best-of breed software including ParentMail - to schools throughout the UK.

## "Schools have to move with the times"

engagement products, often via a branded app on a mobile phone, are increasingly becoming the norm. These have a high level of built-in, targeted communication, allowing two-way engagement - for messages, online payments, form collection, parents' evening bookings and more. When apps account for 89% of mobile media time, according to research, schools need to embrace the benefits of having their own app as the most effective means of engaging parents.

#### 2. Stick to familiar tech

It makes sense to stick to the channels that most parents are familiar with, and already use – like video, mentality and facilitate this kind of dialogue via technology 'out of hours'. Just because some parents can't physically or practically engage during school hours, it doesn't automatically mean they don't care. Listen to their needs and try unconventional ways to reach them.

#### 4. Break barriers

Encocin

Engaging parents using technology will already remove many physical barriers (e.g. for working parents who can't get to school meetings, or absent parents). However, even

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# 🧐 Why I Love...

George Stephenson High School in Newcastle upon Tyne, has been using ParentMail since 2012; here's why!

#### It saves time

George Stephenson

With just under 1,300 students, George Stephenson High School in Newcastle upon Tyne certainly makes the most of ParentMail. One aspect of the parental engagement platform the school fully utilises is +Pay for online payments for school trips, revision guides and more. The school office has noticed considerable benefits, as previously collecting payments by cash and cheque for 1298 students was an extremely time-consuming task. With almost all parents now using the system, it's made managing payments easier than ever.

### 66 It makes tracking much easier

+Pay has also allowed the school to keep better track of who has paid for what and when. The school office reports, "Previously we would have students turn up for trips, who would tell us they had already paid but we had no record of it, so keeping track of this when the payment was manual was quite difficult! Now it's all recorded on ParentMail we can very easily see who has paid, simply by looking at the account."

**Parents get involved** To engage parents in

a creative way, and get them registered and paying online, the school set up a competition where all parents who registered by a deadline would be entered into a prize draw to win school uniform vouchers worth £100. "We thought we'd give it a go to see if it could help improve our parent uptake. We were surprised by just how many parents of the older students got involved, and were



keen to win some uniform vouchers! As a result we now have over 90% of our parents registered on ParentMail."

#### C An improved system

Over the years with ParentMail, George Stephenson has noticed the improvements made to the ParentMail technology and the support available from the ParentMail Team. "With so many students you might expect a few teething problems, but we have really noticed the improvements both to the registration process for parents and to the functionality available for us school side – it's great when you give feedback and then see that you're being listened to. The system is clearly designed with schools and parents in mind."

#### **C**Strong support

"I also have to say that the Support Team at ParentMail are fantastic," comments one staff member. "When I first took on the role of looking after ParentMail I would use Live Chat quite regularly and the team have always been so helpful and responsive. It really helped me feel comfortable using the system knowing I had the team there if I needed them for anything."



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Now communicating with their parents regularly and collecting online payments with ease, George Stephenson High School would highly recommend ParentMail to any secondary school looking to simplify how it engages with parents.

Find out more at www.parentmail.co.uk 01733 595961 Re-engaging students who've stopped caring about education isn't easy, but it's possible – says **Amy Smith** – and technology can help...

am MD of Apricot Online, which offers alternative education provision for vulnerable young people - and in my world, all our students have had their schooling disrupted. It might be through physical or mental illness issues. troublesome behaviour. or abuse. Whatever their backstory, many of these youngsters are feeling out of control and not very in love with the idea of education. If we can't get them to love learning - and we're not miracle workers - what we can, and indeed must, do is let our students find their own connection and comfort zone within the learning space. Without recourse to magic, how do we do that? How do we encourage these broken, fearful, and often hostile students to value learning? Is there anything we can do that will make them see that learning is an enabler to getting the future they want?

Although online learning isn't a magic wand, what technology does bless us with is the gift of anonymity, and that can make a huge difference to many learners.

There's no audience for bad behaviour, there's no troll lurking in the classroom waiting to bully or tease, no-one will remark on your appearance or your 'difference'. Students worry less about asking questions and getting things wrong because no-one knows who they are. Also, in the online world, you can be in your safe space; your home, your bedroom, your familiar territory – and that helps to reduce anxieties.

#### **Choice and control**

First and foremost, then, we are giving a level of control back to the students. With our online real-time lessons, students can choose to talk, use the text box, or be silent. Don't get me wrong, it doesn't mean they can sit and do nothing for lesson after lesson; indeed, one student we had was steadfastly non communicative throughout the term, only to delight us all by passing his GCSEs with flying colours. That student used all their energy to attend and listen and that's ok. A lot of our students can't last through a whole lesson, especially at the start of their online learning quest, as they don't have either the physical or mental stamina. So we teach them according to a mutually discovered pace.

When we first enrol someone, we create a student 'backpack'. Developed in partnership with other agencies, this is a log of previous attendance, progress, learning, triggers, sensitivities, and any other issues and positive interests we can glean from teachers, parents, and/or carers.

The second crucial big win we can deliver is the element of fun. With many students, even if we only have them for a six-week block, we need to first find the hook that engages them before trying to bash them – metaphorically of course – over the head with any exam-driven learning. Many of our youngsters associate learning with all those negative feelings of failure, low self-esteem, and anxiety. This is where the online space comes into its own. Let's face it, it's like air to youngsters, and it also gives us the scope to have some real fun. We do 'Beat the Teacher,' interactive games, and we've got a cool interactive robot that the students can programme to perform all sorts of tasks - this year it's a dance-off contest! All the time we're looking to change that negative experience into a positive one.

### A transparent relationship

Another technique we might use is to make initial material relevant to something that's happening in the news or all around them. It could be the Olympics, a volcano erupting, or maybe a rocket launch – anything that relates to their world and that might make learning valued instead of feared, distrusted, and generally of no relevance to them.

#### 5 KEYS TO RE-ENGAGEMENT

**1. Make fun the number one priority** Ensure the early steps are as enjoyable and relevant to the student as possible. Build an interactive robot; play Beat the Teacher ; do your research into the individual and what interests they might have, and use that as a bridge into learning. **2. First names only** Remove the uneven distribution of power. Cede that power to the student by allowing them to reinvent themselves.

**3. All kinds of awesome**! Make learning a positive experience by praising qualities such as attendance, punctuality, good humour, helpfulness. Little by little you're trying to erode any negative perceptions your student might associate with learning. **4. Make it relevant**. Maths can link to football, English to soap opera. Give your students a connection they can use to make learning of value.

**5. Persevere**. Students who need to reengage haven't had great education experiences, so rebuilding can take time. They need your confidence – even if they are full of doubt themselves. Everyone else has given up on them; so they need you.

# *Give them* **A CHANCE**
First names between teacher and learner also help. We want to create a transparent relationship of trust between our teachers and students and remove that skewed power hierarchy that traditionally exists between the two. I'll never forget an instance back when I was teaching in a mainstream school, when one of my students said that all teachers wanted to do was to make the lives of their students as difficult as possible. As someone who – and haven't we all at some time – fostered fantasies that she was the cool, friendly, popular teacher, I was really shocked to learn that this was a commonly held concept; and, moreover, one that was shared across the school, even by the learners who bought great end-of-term gifts! It's first names only on both sides for us now, and our whole emphasis is on empowering the student; we want them to feel comfortable, in control, and mostly that we are there to help them.

## Committed to success

Having a flexible curriculum is also a huge bonus that we can offer with our online school. As more and more mainstream schools cut subjects from their portfolio, if we can offer business

"Many of our youngsters associate learning with all those negative feelings of failure, low self-esteem, and anxiety"

> studies or tourism as the carrot, students are more likely to accept they need to study the core subjects, too. Interestingly, the most popular courses are often law and forensics amongst the kids who might have a criminal record or be at risk of gang violence, and psychology for those that have experienced mental health issues. I don't think we should be all that surprised; after

all, our students are simply showing a real interest in their world, and their experiences, and wanting to learn more.

Technology, however, is only a part of the equation that feeds into our school's success with re-engaging students and it is very successful. The hottest, most complex technology in the world means absolutely nothing in the hands of someone who isn't wholeheartedly committed to the success of that child. The technology is undoubtedly an enabler, but without first-class educators, you may as well sit the students in front of a blank screen. What online teaching really does is to enable the teachers to create lessons that suit an individual class or student. It is his or her skill in teaching, differentiating and extending, that means lessons are never impossible, never discouraging. We use a student-led teaching model which means our voung people must take responsibility for learning. but we are able to guide students to success whatever success may look like for that particular child, and I think that underpins what we do, and why we do it.



ABOUT THE AUTHOR Amy Smith is MD of Apricot Online, a school which primarily caters for vulnerable or challenged students.

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Press the right BUTTONS

If you want to switch girls on to computer science, try using games design as a hook, suggests **Vanessa Bonthuys** 

n the 70s, young people expressed themselves through composing and playing music; today they're just as likely to play, write and distribute games. As consumers, they enjoy everything from Fortnite to Angry Birds; as creators, they can be incredibly original and innovative, as I've certainly found with the students at Simon Langton Girls' Grammar School, where I teach. Games design is a very resourceful medium that offers teachers across the curriculum lots of opportunities to engage students - through writing concepts, drawing and depicting games, and, of course, coding.

I've always been interested in gaming and games design, and my previous careers in design, IT and web design, combine a lot of the skills that are needed. I taught myself a range of computer languages and then, when I started as a teacher, had the opportunity to bring all this experience together.

#### More than code

In my view, the current computer science curriculum is about as exciting as watching paint dry! Instead, I've found that encouraging my students to get interested in games design really gets them enthusiastic about learning the key skills of computational thinking and problem solving. It's a practical and fun way to use common computing principles, logic and techniques. Not every young person is thrilled by computer science as a subject, but I've noticed again and again that if we focus on games design as an introduction to computing. they become much more interested, and engage a great deal. We mostly make use of free software, which we are able to run on the school network. It is also safe and easy enough for the girls to install at home. One of the things I try to emphasise to students is that games design involves much more than just coding.

A good example of this is our recent entry to BAFTA Young Game Designers (ygd.bafta.org), a competition which aims to encourage a greater interest in games design from young people. Three Y10 students worked together on their entry and created Battle *Punk*, a working game that features a pacifist who needs to undo a curse that has been put on humanity, meaning they are perpetually at war. To complete the challenge, the girls had to use a wide range of skills covering

coding, art, design, music and storytelling. The process of designing and making a game helps students to really understand the breadth of what is involved. Indeed, one of the team was actually not studying computing at all. Instead she was able to use her knowledge from Games design also provides a great way for students to develop collaboration skills. In lessons, the students often work in pairs or groups, which demands excellent team working and helps to develop their communication abilities. These are essential qualities in the workplace, and those which employers regularly cite as lacking in today's young people.

#### **Building resilience**

An issue that has arisen a great deal in teaching computing is that my students don't like to be wrong. They are very hardworking and diligent and find it frustrating that in computing things rarely work the first time, nor the second or third. This effect of being regularly wrong can create an almost immediate flurry of "I am not good with computers" or "I do not like computing" from the girls. In response, I try to instill a spirit of optimistic perseverance. Interestingly, this is a characteristic that gamers need to apply continually. They have to stick with a problem, try countless different strategies, and improve

their overall performance in order to progress in the game.

To help students increase their ability to persevere with a task and not become downhearted, I set up a number of lunchtime clubs where students play a central role. These focus on helping young people to use their technical knowledge in a practical way. The Robotics club, run and organised by current Year 8 and 9 students, focuses on coding LEGO bricks to take part in robot games, as well as the First Lego League. The Electronics club uses Micro:bit to create a range of challenges and interactive games, such as racing cars, and using the Bluetooth abilities of the hardware to play hide and seek. Finally, two sixth form students organise the FUZE, **Raspberry PI and Minecraft** club, and the Python club. It is a busy week – but also one where students can have fun and apply their knowledge.

The success of the lunch clubs we offer at school is down to a number of things. They are organised and led by our students rather than teachers, and they give the girls something different to do at lunchtime – and a great place to hang out! We've also had the help of a

# "I try to instill a spirit of optimistic perseverance..."

local STEM Ambassador, who brings in extra hardware, software and gaming platforms which allow students to try out different technical environments and test what they're making.

#### A new generation

I think teachers can sometimes feel that games design is a challenging subject to introduce. Setting up a lunchtime club is a good place to start, getting students involved and encouraging them to use and develop their skills. The **BAFTA Young Game** Designers website also has free resources for teachers interested in running a games design project with their students: vgd.bafta. org/welcome-to-the-ygdteacher-resources-page.

2018 is the Year of Engineering, which is celebrating British engineering talent and also helping to promote engineering to a whole new generation of young people. A key priority is encouraging more women to join the profession. Computer science is core to engineering and I feel strongly that the young women and girls I teach need to be prepared to play their part. I see my role as a mentor to build my students' confidence, to allow them to develop as independent learners, and encourage them to feel passionate about computer science. Game design is a route to engage them in this interesting, but challenging subject.



ABOUT THE AUTHOR Vanessa Bonthuys is responsible for Computing at Simon Langton Girls' Grammar School in Canterbury, and was a 2018 Mentor Award finalist for the BAFTA Young Game Designers competition.

# SOMETHING FOR EVERYONE

**Sal McKeown** visits a school where award-winning work on technology for learning support is helping all students achieve their potential



ith innovations including an apps wall, a YouTube channel featuring tips from students, and cross-college support for teaching staff, it is easy to see why Laura Stephens was nominated for a Nasen Effective Technology Award last year for her work on learning support and technology at Barton Peveril Sixth Form College in Hampshire.

There are 3400 students in the college. Some are heading for A levels and university, but it can be a challenge to motivate students whose exam results have been disappointing and who are doing GCSE retakes. Approximately 20 young people studying at Barton Peveril have high learning needs and require one-to-one support in class. A further 400 learners, approximately 10% of the student body, require some support and technology.

Google Chromebooks are the basis of student support – but since the emphasis is on making all young people independent, the college encourages learners to bring their own device and each class features an array of laptops, tablets and smartphones. In classrooms, there are pocket charts with numbers where devices are placed at the beginning of the lesson and students get them out when they to go onto Google Classroom or access apps for quizzes.

#### **First steps**

Barton Peveril College's journey of technological innovation started with Google Drive and a big push on collaborative writing. Tutors would set an exam question and everyone would chip in with different ideas and get the benefit of other people's thoughts. This way they practised using the technology but also expanded their skills and knowledge learning from one another.

"At the beginning of the year, some students are reluctant to communicate," says Laura, "so we begin by using the Comments and Chat option on Google Docs to talk about their work, until their confidence grows and they are willing to talk directly. It is also a helpful resource to use outside of the lessons."

Now, with Google Classroom, the students needing learning support sign up for advanced

### "It is important to hand things over to our young people..."

revision, organisation skills and tips on getting the best from assistive technology such as Texthelp's Read&Write. And this year, the college is loading more content onto Google Classroom to benefit staff, for example information from a module on Girls and Autism run by the National Autistic Society, and some simple slides with top teaching tips from the TES SEN show. "It is a good way of staff keeping up-to-date," explains Laura. "Instead of reading reams of text, they get a snapshot and know where to go for more information."

#### Apps of choice

The Great Wall of Apps has been a huge success. Many learners like Speechnotes, for example, which lets them dictate their ideas which will appear as text in Google documents. Memrise, with videos audios to help with language learning, is now branching out into other areas, covering humanities subjects such as history and geography; and for students who used to think revision meant re-reading and reciting their old notes, online

#### **FURTHER INFORMATION**

Nasen awards recognise individuals and organisations that have developed inclusive practice that has improved outcomes for children or young people with SEND. This years awards ceremony will take place on Friday 19th October at The Waldorf Hilton Hotel. For more information, visit nasen.org.uk/awards. Find out more about Barton Peveril Sixth Form College at barton-peveril.ac.uk.

flashcards and revision games provide an effective interactive alternative.

"Organisation skills always come up at open evenings," Laura observes. "It's a real bugbear, and an area that needs improving; we recommend My Study Life and Todoist among others."

Also popular at the moment is Forest, an app which helps those learners who get distracted and keep checking their phone when writing an essay or doing revision. It has a picture of a tree and the longer the student stays on task the more it grows. Laura finds that this app works really well for students who like video games and relish a challenge. "Of course, other students look at me as if I am mad," she laughs. "I show them apps all the time. I'll talk about what's good and how to use it. They like the fact that I have given it a go and know about it."

Read&Write is another clear hit, especially for students with severe dyslexia. Learning support staff are visiting GCSE English lessons to introduce the software so it becomes the norm, not just for learning support students. Teachers can add voice notes through Read&Write to give verbal feedback on work rather than written comments. This saves time and is more immediate. Some students use the ReadAloud tool that reads web pages, news, documents, e-books and lets students hear what they've written. These are especially good for A-level students studying English and history, where they will be dealing with large chunks of text. Meanwhile, on the maths front, every student retaking GCSE has a log-in for the website Mathswatch. Each topic has 20 questions, and if the students are required to use a protractor or a compass there will be one on screen.

#### **Real voices**

The college has its own YouTube channel where students load short videos to help others. This started with a Read&Write tutorial, demonstrating how to change the settings so users can read independently until they need help with a word or phrase.

The students are also using technology to raise awareness of different disabilities and learning support needs. They are making videos for staff to show them what helps and what doesn't. Some don't want to be identified, in which case others will step in to do the voice-over. One student who often uses a stress ball wanted staff to know he is not messing around but that it serves a therapeutic purpose. And six students were interviewed in pairs discussing what not to say to a person with ASD, such as, "You could be normal if you tried!"

"We are going to build up a library of these personal student stories," comments Laura. "They go out to all teaching groups and were displayed in reception during Autism Awareness Week 2018. It is important to hand



things over to to our young people; it provides an honest reflection of how they feel, and gives them a voice."



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





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# CREATIVE CPD

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## THE EVOLUTION OF TEACHER TRAINING

Changing pressures on our schools and teachers – from budget constraints and a teacher retention crisis, to technological change and growing class sizes – make CPD one of the most important tools for improving schools and building the innovation capacity of our education system.

However, with the Teacher Development Trust reporting that schools in England spend just 0.7% of their budgets on CPD (compared with over 10% in other high performing school systems such as Canada), there is a real need to ensure that CPD opportunities available are both more effective and more relevant.

#### Demand and supply

There are some promising signs. There is no shortage of CPD options available to teachers, from expert presentations and training, to full-day events and community message boards. Perhaps most importantly, teachers are keen to learn and share good practice and research; an attitude highlighted by communities such as ResearchED. But more must be done to improve the effectiveness and usefulness of CPD to match this willingness to learn.

Many CPD courses require teachers to take time out of work to attend off-site training programmes, or attend whole-school Inset training that may not be suited to their needs. For time poor teachers and resource stretched schools, these factors can act as barriers to accessing quality professional learning. Innovative online platforms like FutureLearn can facilitate access to quality CPD courses, bringing best practice from around the world straight to the teacher's personal device. It also allows teachers to be flexible and select courses that address their own development needs.

#### Pointing the way

We know that CPD is most effective when it is focused on a particular outcome, sustained over a longer period of time, collaborative and evaluated. Although it is important that teachers should have flexibility to choose CPD that will be most useful to them, more can be done to signpost teachers to the most impactful opportunities.

Looking to the future, as technology in schools becomes increasingly important to ease the administrative burden and to innovate learning environments, we must not overlook the importance of good CPD in helping our education adapt to an increasingly digital age. Without a strong culture of targeted, creative and evaluated CPD, we will not be able to realise the potential of technology to improve our education system.



Director of Education in the Innovation Lab,

bringing together Nesta's work in education across innovation programmes, research and investment.

this directly, it provides a fascinating romp through the history of artificial intelligence, and poses interesting questions. What, for example, is the difference between a 'smart' home and a 'connected home, and why does it matter? The book also covers deep issues such as, 'can computers be creative?'



of senior leaders in schools

indicate edtech completely,

or mostly meets objectives

originally set.

and what are the risks of super-intelligent machines and black boxes?'. The latter is not something we won't have to worry about until some far off future: we face the problem now. This would make for excellent background reading, and a worthy addition to your ed tech library. Reviewed by Terry Freedman

#### READING LIST: T&I RECOMMENDS...



Thinking Machines (Luke Dormehl, WH Allen, £14.99) One of the least talked about aspects of the programme of study in computing is the section that states 'undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including... meeting the needs of known users'. While this book will not address

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# *"We will never be* **FINISHED"**

At Honywood school, in Essex, technology supports a strong curriculum and genuinely personalised learning, as **Paula Downes** explains...



remember my secondary school; I remember my teachers, I remember the classes, and I remember everything that I wish could have been different. Oh yes, I had a streak of your typical apathetic teenager - but it wasn't about that. I remember doing the same thing as everyone around me, and writing down a lot of what had been told to me. I also remember struggling to revise for my GCSEs, because as much as I seem to recall an awful lot of those memories now, all I could see in my head were

words on pages, and they didn't make much sense.

So why go into teaching if school was so awful? Well, I believed it could be better. And now, I still wholeheartedly believe that learning can be one of the most special things about being alive. At Honywood, there has always been a vision for that little bit more; to create an education where learning is engaging, independent, learner centred and above all, personalised. And technology is an important tool in helping to make that happen.

#### A strong curriculum

We didn't start by buying a load of tablets. Quite honestly, just throwing those into any school is a really bad idea without careful thought about what you are trying to achieve. We spent a number of years developing our own knowledge about the process of learning, and analysing what the aim of true learning really is. Then, we designed a curriculum structure that focused on the understanding of process rather than product, and that looked through a dual focus lens of quality subject learning and important

personal attributes. That's how we strike the balance between ensuring lifelong learning and preparing our learners for the traditional process of exams. Being engaged from the get go is a lot of the battle in making them successful at that stage. And one of the biggest positives of implementing technology is it enables our staff to engage all by offering a wide choice to learners. We all know that a class full of young people will not all have the same strengths and preferences about how they learn, and all will need different levels of support. We are so lucky to have staff who embrace the challenges that offering a personal approach takes – the extra hard work and the willingness to adapt, continually.

#### Reflect, reflect, reflect

Recently, working towards gaining our Apple Distinguished Schools status gave us the opportunity to review exactly what was working and what wasn't. It's been really important along the way to think about what we are still working towards, and what we can do to better achieve it. Reviewing our use of technology has been important, and along the way we've made changes to the things that have needed

#### 4 THINGS TO CONSIDER WHEN DEVELOPING YOUR TECH STRATEGY

+ You can't just drop technology into a school and expect the magic to work. It took years of developing our model, the practice and pedagogy; technology is a tool that enhances it.

+ Don't try to use everything that everyone else uses; choose a few key things that technology can add to your curriculum to start with.

+ Give time to your staff to develop their skills; for some it can be a different world from the experience we all had at school. Empower colleagues to take the lead in helping to develop others.

+ Keep it streamlined; don't have lot of things that do the same job.

refining, or reworking altogether. We've always placed a lot of value in the voice of our learners at Honywood, and so taking their feedback along with that of colleagues was extremely important in this journey. Being able to meet colleagues from other educational settings has been hugely valuable in this process, too; it's something that we all struggle to find time for, with restraints on time and cover budgets, but seeing success outside of our own four walls is what has enabled us to take some of the steps we have. We all like to see something working well before we make a change!

#### **Free for all**

Ok, it's quite clear that the tablets weren't free! But everything we ask our learners to access is. Introducing the tablet was never about creating a superior environment, it was about building an equal one. So we've made sure that the apps we look for are at no cost to learners, or something we are prepared to fund as a school. One of the biggest changes we've made is streamlining our practice to using one cloud based platform that interlinks a number of apps, all of which are free and offer our school community unlimited storage. This allows for seamless creation and sharing of content between teachers and learners. Let's face it, in a digital age where young people are used to finding everything after a few taps, we've got to keep up with the speed at which they are used to accessing information.

#### Simply the best

In all aspects of what we do at Honywood we strive to achieve the best we can, and our approach to using technology is no different. One of the best things we did was to implement our digital learning team. This group of staff was brought together, representing each subject area, to ensure that we share the best practice when it comes to using technology as a tool for education, and to lead the ongoing research and development of how technology can enhance the learning experience we offer. One of the important things to remember is that we will



### "We are so lucky to have staff who embrace the challenges that offering a personal approach takes"

never be 'finished'. Technology is ever evolving, so our mindset must be too, which will ensure we always remain at the forefront of modern education. Of course, that approach means that we have set ourselves up for an endless workload of research and development... sounds exciting, doesn't it?



ABOUTTHE AUTHOR Paula Downes is an assistant headteacher at Honywood School in Coggeshall. Visit www.honywoodschool.com or search for the school on the Apple iBooks store.





classroom - and beyond it



Rachel Whitfield (née Jones) is a Google **Certified Teacher** interested in creativity and innovation in the classroom. Rachel is a regular blogger for The Huffington Post and a lively contributor on Twitter (@rlj1981). She has published two books, Don't Change the Lightbulbs and Teacher Geek with Crown House Publishing (crownhouse.co.uk)

#### "I CAN'T KEEP UP!"

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I started my teaching career longer ago than I care to mention, and have been leader of a maths department for just over ten years now. Of course, many things have changed since I first stepped in front of a class of learners (we used to call them 'pupils', for a start!), but the only thing I really struggle with, is the increasing use of technology in all parts of my job. I'm no luddite - but what I really need in order to keep up is some training. However, that's never on offer, I'm just given something new to learn and understand almost every day, and have to get on with it. Should I raise this with the SLT, do you think? Or is there support I can access unilaterally? Everyone else seems to manage - why can't I?

I would put good money on you being no luddite! The problem with accessing edtech is that there is just so much of it on offer; it can feel pretty impenetrable and overwhelming. Often, the solutions to our development problems can come in house; is there anyone doing anything sparky and interesting with technology in your school? Might they be willing to spend some time showing you what they are doing? Many schools have working groups who are given some time to research and then feed back what was effective for them; is this something yours would consider? Failing that, have you had a look online? There are a surprising amount of teachers writing about education technology, often making videos which you could use to help you, with the added extra of the support network of Twitter. If making contact with folks online doesn't feel like it would suit you, then you

might like to think about attending a local TeachMeet, which is grassroots professional development for teachers by other teachers. I think what you are looking for is a bespoke solution to your problem, which a one-size-fits-all kind of course would probably not cater for; what's important here is that the school recognises that you need some time to access this, and that it counts towards your professional development. Finally, remember that not everything you try will work first time, and it is totally ok to use old school pens and paper if those are the most effective tools for the job. Good luck!

#### "CAN WE USE TWITTER FOR LEARNING?"

I teach history in a school that's part of a reasonably large MAT. Recently, my head of department suggested that I set up a 'Twitter feed' for our subject - of course, I enthusiastically agreed; but in reality, I have no idea where to start! I do use Twitter myself, but only really to follow writers and historians I admire. My boss is looking for something properly interactive, that will encourage our students to engage - do you have any tips?

Oooh! That is a tricky question. Setting up a Twitter feed as a department can be a difficult undertaking - but here are some ideas that might be of use. Follow relevant places, like museums that you have been to on trips, and retweet anything that looks of interest. These kind of venues usually have an education officer who will be tweeting out educational content that might catch your students' eyes. Similarly, as you've already discovered, many academic historians also have their own Twitter accounts, and post all sorts of interesting links. I have seen everything from opinion pieces on Trump to academic conferences on collective memory in France. This kind of content can help give learners a sense of the wider place of history as a subject in the world outside the classroom. Also, with an eye on the prize, follow the exam boards and keep an eye on anything interesting they put out. At the same time, start tweeting interesting snippets from the day's work in class; using the Twitter feed in lessons (say, as a starter question); and sending out links to pupils so that they get used to engaging with it. I will say this though, be very careful that the account is in keeping with your school style in terms of its handle, do not use any copyrighted images, and steer well clear of any potential child protection issues. Check with your head of department if the department account can follow pupils, and I would recommend to avoid any private messages. When Twitter is used well it can be an amazing tool for the classroom, but your safety and the students' must come first. That aside, I think this is a brilliant idea, and expect that your account use and engagement will grow organically.

#### "CAN TECH MAKE MY LIFE EASIER?"

Like every teacher I know, I'm always looking for ways to reduce my workload, without negatively impacting on my students. I'm sure that there are many ways I could be using technology to this end – but every time I start looking for ideas I'm faced with such an overwhelming array of apps promising to achieve miracles for me that I end up giving up completely! Could you perhaps recommend three or four apps that are practically guaranteed to make my life easier, and explain why?

I can so relate to this question! I love trying out new apps and tinkering with technology – but even I find it hard to keep up and work out what is effective. I would recommend that you keep it simple and think about what the impact on learning is that you're trying to achieve.

Using cloud storage for filing pupil work can save you a lot of time. There are a variety of platforms for this, but I think Google for Education or One Drive are prevalently used in the UK. It does take a while to train students to into filing work digitally, but it is worth it!

Secondly, there are digital tools, such as NearPod or Socrative that let you create interactive quizzes. The kids love them – but the real joy is you can see each student's individual answer to every question, enabling you quickly and easily to identify gaps, and plan differentiation. You can reuse the quizzes for different classes, too, so it's a time investment that really pays off.

Finally, have a look at Pinterest. I know this isn't billed as an education use app as such, but whenever I need some inspiration I always find something there. I really can't tell you how much time it's saved me trawling the internet when I am looking for ideas.

#### "MY HEAD DOESN'T TRUST SOCIAL MEDIA"

Q I work in a good comprehensive school, in an inner city area where competition for Y7 applications is pretty fierce and most, if not all, of the schools are at least 'good, with outstanding features'. It seems to me that we should be using social media a lot more proactively in order to raise our profile with prospective parents; but our head teacher is adamant that 'schools and social media don't mix'. Do you have any arguments I could use to persuade her to change her mind, and/or suggestions for specific ways we could improve our reputation through the use of various social media channels?

You are so right! Social media is a key marketing tool for schools, and those not using it are really missing out. I would start by addressing any esafety issues that your head has. Suggest that one, trained person – with clear guidelines – should be in charge of updating the social media. Alongside this, you can deal with questions of house style, and what is appropriate for your particular setting. Then show your head examples of local or comparable schools already using social media; when it's done well, you get a real feel for how happy and aspirational a school is, which a website just can't convey. Explain, too, that social media can be used to communicate with current parents as well as prospective ones, and that doing so sends a strong, positive message about engagement. Finally, it's worth pointing out that the school will have an online presence regardless, and so it makes sense to take control of it as far as possible, especially as the available channels are cost-free.

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## "Our aim is to inspire and empower educators"

Andrew Caffrey, regional director, explains how EdTechTeam can support teachers to make effective use of technology in their classrooms



### T&I Who are EdTechTeam, and what do you do?

AC EdTechTeam is a global network of educational technologists, that offers consultancy and training services for a range of schools, academies, teaching school alliances and multi-academy trusts. We help teachers learn to use technology in meaningful ways to help transform teaching and learning in their classroom. Our trainers are current or former teachers who believe technology can make a positive difference, reducing workload and allowing teachers to focus on student interaction. Our aim is to inspire and empower educators - to raise their awareness of what's possible, get them excited about their own vision, and help them feel confident that they can take the steps necessary to fulfill their



goals. And this is only the beginning: EdTechTeam engages with schools as an active and responsive partner in long-term change initiatives.

## Why is technology training important for all teachers?

Most teachers use technology as part of their daily routine, but a lack of training often means the benefits of using technology are missed. Students themselves are digital natives and teachers often feel they lack the skills to navigate this changing landscape. With many schools now moving to cloud based platforms, such as G Suite for Education, these changes provide an opportunity to upskill teachers to use technology effectively.

### How do you support schools to use technology in the classroom?

At EdTechTeam, we believe meaningful school change requires a focus on Student Agency supported by Courageous Leadership, Empowered Teachers, Inspiring Spaces, Engaged Community, and Robust Infrastructure.

Our services include Custom Inset Training Days, where our trainers deliver face to face courses in the school on inset days or as twilights. The needs of every school vary, so following an initial assessment we deliver training that can help a school upskill its staff and meet its school improvement plan targets. Popular topics include:

• Technology does not equal student engagement – focusing on the pedagogy and how to embed technology into lessons so that the emphasis remains on the learning.

• Introduction to G Suite for Education (Google Apps) – ideal for schools that are "Going Google", we introduce the key benefits of G Suite.

Integrating Technology in the Classroom – an introduction to tools available for teachers in the classroom.
Flipped and Blended Learning – can we maximise classroom time, by introducing new learning before the lesson? This session looks at the tools

#### for flipped and blended learning. What about individual

#### What about individual teachers who wish to improve their own skills?

For individual teachers, we also offer workshops across the UK. EdTechTeam Online offers anytime, anywhere learning to help teachers advance their digital skills and knowledge. Finally, EdTechTeam Press features a catalog of 21 books (in both print and e-books).

## Can teachers gain certification to show their technology skills?

We offer a range of courses that can lead to certification. As a Google Professional Development Partner we offer Google Certified Educator Level 1, Level 2 and Trainer courses which allows schools to develop their own staff to lead on the use of technology within their school. We also work with ITT (Initial Teacher Training) Providers to offer qualifications to trainee teachers in addition to QTS.

edtechteam.com; andrew@edtechteam.com; 0800 368 8057

# 8 ways to improve your EDTECH TRAINING

The latest classroom innovation can only have impact if people know how to use it, says **Andrew Caffrey** – so is your CPD up to scratch?

ccording to recent research from BESA, 36% of primary schools and 24% of secondary schools spend less than one hour training staff on the effective implementation of edtech solutions (Edtech in **English Maintained Schools** Report, May 2018). Yet the benefits of using educational technology to support teaching and learning are clear - so how do we go about engaging staff with CPD in this crucial area?

#### **More choice**

We still see a lot of the 'one size fits all' approach when it comes to CPD for teachers – generally manifested as every single staff member being dragged into the school hall on an Inset day, and sitting through a succession of presentations that may or may not actually be relevant to them.

Offering choice and running a number of different sessions at the same time allows teachers to buy into a topic they are interested in. It also allows for differentiation, with offerings for beginners and more advanced practitioners available at the same time. These could be delivered by existing teachers with a particular passion for a topic – although for more advanced topics or cutting

edge ideas it is often useful to use external trainers.

#### **Practical sessions**

Practical, hands-on sessions with technology will always have a far greater impact than a simple talk or demonstration on how to use a new product. Delivering a smaller group workshop with laptops, or in an ICT suite, gives teachers the time to explore the novel tools and ask questions. This kind of experience empowers educators to feel confident in the use of new technology in their own classrooms. therefore making the training valuable and worthwhile. It is also good to place an emphasis on how teachers might plan to incorporate the tech into their own lessons, encouraging them to produce subject specific examples as part of the session.

#### **Online training**

Many of the common tools used in schools offer free online training and certification for teachers. Teachers can work through these courses to deepen their knowledge and understanding of a product. Here is a selection of online training courses that could prove useful for teachers:

• Google Certified Educator (teachercenter.withgoogle. com/certification\_level1) • Microsoft Innovative Educator (education. microsoft.com/microsoftinnovative-educatorprograms/mie)

• Apple Teacher (apple.com/ uk/education/apple-teacher)

• Flipgrid Certified Educator (blog.flipgrid.com/ news/2017/6/19/ flipgridcertified)

• Adobe Education Exchange (edex.adobe.com)

• Seesaw Ambassador (help. seesaw.me/hc/en-us/ articles/205699205-Becomea-Seesaw-Ambassador)

• EdTechTeam (edtechteam.online)

• EdPuzzle (go.edpuzzle. com/OnlinePD.html)

Schools need to consider how they accredit the value of these courses. Can a teacher complete some of this on an Inset day, or count the time spent on these courses towards their annual CPD requirements? There is also the opportunity to celebrate staff achievement when they gain certification; many online courses and certification provides badges or certificates that could be displayed in school, as well as referenced as part of an individual's signature in communications.

#### **Breakfast briefings**

Technology products update all the time and this does not always fit it neatly with the school year. If you have something new to share with staff, then running a session ten or 15 minutes before the start of the day – and encouraging staff along with free coffee or croissants – may provide enough time to spark fresh ideas in the classroom.

#### Specialist coaching

An increasing number of schools are using coaching as part of their teacher development. Pairing up staff members with different skill levels and giving them the time to observe their peers using technology in lessons can be a powerful way to drive engagement. It also allows educators to see innovations being used for everyday teaching and learning, rather than in a training environment.

#### **Digital leaders**

Many schools now have teams of student digital leaders, and these can be used to help with staff development. They are already going to be in lessons around the school, after all, and – following some initial training – will be ideally placed to provide support and training for teachers. It may also be beneficial to invite them along to any staff training sessions you are delivering, to act as both 'guinea pigs' and advisors.

## Performance management

Some schools use their performance management process to identify particular edtech training needs, and set clear targets for teachers in this area. This helps to raise the profile of technology within the school and gives teachers a pathway to follow in order to to develop their skills. Individual educators become more proactive about improving their use of technology, and this spreads further as they collaborate with other members of their school community.

#### Grow your own

There has been a growing trend of schools using their own teachers to deliver training; and there are certainly benefits to hearing about technology from your peers. But what if no-one on the team has the required skill, or if you are using a product for the first time? There is a range of external courses available for teachers and I have been working with a number of schools, multi-academy trusts and teaching school alliances to train staff to become trainers, making them self sufficient to deliver their own CPD in the long run. Is there someone on your staff team you could identify to take on this role?

With schools still spending significant amounts of money on technology, both in terms of devices and software, having a clear development plan for teacher training is vital. Edtech has the potential to reduce workload for teachers, and provide their students with engaging content and variety in lessons... but only if everyone knows how to use it.



ABOUT THE AUTHOR Andrew Caffrey is a Google certified innovator and trainer, and the regional director for EdTechTeam in the UK. You can follow him on twitter, @MrCaffrey.



teachwire.net

# TAKE A SECOND LOOK AT YOUR LESSONS

Sometimes a different perspective is all you need to teach more effectively, says **Dr Sean Warren** 

o you ever have that nagging suspicion that something went wrong in a lesson? That you missed something that may have led to a loss of learning, or caused students to switch off? It always intrigues me in my role as an educational consultant, researcher, and trainer, to see how it is often the little things that make all the difference.

I've been exploring the importance of such critical incidents for the past decade, but over the last couple of years I've been able to take my work to a new level by using ONVU Learning's innovative 360-degree camera system, LessonVU. With the teacher's permission, I can see more lessons, zoom into different parts of each lesson, and remove the well documented 'observer effect' that changes how students (and teachers) behave when visiting adults are in the room.

#### **Clear insight**

Even more gratifying is when teachers I have worked with begin to review their own lessons independently to validate their initial self-impressions. For example, in a maths lesson at Hereford Academy, one teacher thought she'd explained plotting linear graphs well and had good 'traffic light' feedback from the class. However, at the end of the lesson she sensed that understanding wasn't great. She was able to use footage of the lesson to identify at what point students started to struggle. Stimulating recall, she then asked them what had happened. They said that they hadn't actually understood but thought they would cope when faced with the mathematical exercises! Armed with this insight she was able to reflect and improve the way she asked questions to check that understanding was established before her students worked by themselves.

An MFL teacher at the same school was concerned that students were often off task in lessons. She

noticed, using classroom footage, that this often happened when she was moving around the room, helping individual students. Adapting her practice, so that students brought work to her, enabled her to maintain peripheral vision of the group - to ensure a more productive atmosphere. This notion of strategic positioning as a component of classroom management also became apparent to her colleagues. Consequently, three teachers, on reviewing their own lessons over a period of time, decided to rearrange the layout of their rooms to create better learning outcomes for their classes.

#### **Better relationships**

In a third classroom at Hereford I found another example of how changing pedagogy and peer coaching can improve relationships with students. A science teacher worked with a colleague from the English department. Reviewing clips of her selected footage led them to ponder whether she could make the goal of lessons more explicit to her class. She now shares not just the intention of each lesson, but also its context within the scheme of work. She reports that "students now seem to feel a real sense of belonging as a consequence of understanding and are showing more engagement with the entire session."

In my wider experience I've seen the teacher deliberately using students' names at the beginning of any direction or instruction (rather than adding it at the end) to skilfully gain an individual's attention, and I've observed how effective use of formative assessment to periodically check for misconceptions and degrees of comprehension frequently



leads to better learning outcomes. However, it is the context and relationships which determine the effectiveness of any intervention or approach – like anyone who has ever worked in a classroom, I know all too well that there are no magic bullets' that apply in all situations.

#### **Fine tuning**

Over the past few years it's been very helpful to see academics such as Dr Matt O'Leary of the University of Birmingham, and Professor Rob Coe of Durham University, state clearly that observation has little value as a monitoring tool. I'd recommend reading O'Leary's book Reclaiming Lesson Observation: Supporting Excellence in Teacher Learning for more examples of how teacher learning can be at the centre of observations instead.

My 'Align' methodology supports this approach and advocates that post observation dialogue has to be non-judgemental and centred around the identified classroom needs. It is this which informs subsequent professional development. Align's descriptive data provides insights on teaching and learning exchanges and illuminates pupils' social interactions. It provides a snapshot of lesson flow and illuminates critical moments to encourage reflection.

I advocate the development of a school culture which encourages an attitude of inquiry, enabling teachers to be more honest about their strengths and areas for development. Despite having to contend with an unfavourable Ofsted judgement. I can attest that Hereford Academy is an example of this – a school that is committed to creating an environment which cultivates professional learning rather than constantly judging their performance. The shift in emphasis is encapsulated by this comment from Hereford's head of MFL: "It's helped me find my teaching passion again."



**ABOUT THE AUTHOR** Dr Sean Warren is educational consultant at ONVU Learning, and author of *Living Contradiction*.

#### FIVE WAYS TO GET THE MOST OUT OF CLASSROOM FOOTAGE

Aston University Engineering Academy has partnered with ONVU Learning and its LessonVU lesson capture, storing and sharing solution to become the first school in the world to deploy the use of the new technology and methodology to aid staff in achieving their full potential through self and guided coaching in every one of its 28 classrooms. ONVU Learning director, **Andy Goff** explains how to make this approach to CPD as successful as possible:

#### 1. Create personalised recording

The LessonVU recording is a personalised view of the normal teaching that happened in the classroom. By being able to focus on any specific moment or area of the room, teachers are enabled to identify personal behaviours that they can improve on or repeat as part of the training process.

#### 2. Internal knowledge share

Once a teacher has identified what does and doesn't work in their own footage, they are able to share this with their colleagues both within their own departments and in wider circles. Having this ability removes the malpractice of working in silos which can often become closed off to new methods of both teaching and learning.

#### 3. Progressive self-assessment

The teacher has full control of the video and who else sees the footage, creating a low pressure, self-led ecosystem. Whether the teacher shares the video with another teacher or the head of the school, they are in full control of what they wish to focus on. This leads to productive and exploratory learning.

#### 4. Challenge misconceptions

The very nature of reviewing a class allows misconceptions to be challenged. By having video evidence teachers are able to dispel myths they may have about themselves, the students' response to different teaching methods or other's' misconceptions of what works and what does not.

#### 5. Measure progress

The ability to re-watch any footage allows progress to be identified clearly. By comparing two different sets of footage from different time periods, teachers are able to easily identify areas that have improved and those they need to work on. This helps to maximise existing training programmes, identify new requirements and prevents a plateau in their progress.



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# "I'm humbled by the impact"

**Yvonne Baker**, chief executive at STEM Learning, reports back on this year's ENTHUSE awards...

TEM Learning's national ENTHUSE Award Celebrations are the highlight of my calendar year. Hearing about the impact of the incredible teaching work that is taking place always brings everyone close to tears – and it was no different at the 2018 event.

We hold the ENTHUSE awards, not just to inspire teachers to achieve the very highest standards in their work, but also to share stories of their achievements, and to thank them for providing a world leading science education to young people, which we hold dear.

That's one of the reasons why we held the national final at the Royal Society in London this year. It's the oldest scientific academy in continuous existence, and we wanted to give all of our nominees a real sense of accomplishment and grandeur. As our Chair, The Baroness Brown of Cambridge said, hearing so many inspiring stories while surrounded by portraits of the world's most eminent scientists made it one of the best dinners she has had there. It is the impact on young people's lives that we hear first-hand at these evenings that makes such a difference to our work; and it's one of the reasons why so many dignitaries also joined us there.

#### Amazing journeys

All those nominated had made it through from the regional heats in London, Newcastle and Northern Ireland following their applications explaining how they had used their professional training, resources and engagement with the wider related

Winners Gail Pughe and Molly Fletcher, Hilderthorpe Primary School Primary, Bridlington – STEM Learning's ENTHUSE Primary School of the Year

business and research community through our training, resources and networks, to inspire their students.

From hearing how teachers from schools that need the most support are striving relentlessly to immerse their pupils within different opportunities to improve their experiences, to how technicians - the unsung heroes of science in schools - are continually going above and beyond the call of duty, the evening is full of such positivity, support and satisfaction, that it definitely makes all the magnificently challenging work worth it.

Among the winners, Hilderthorpe Primary School, in Bridlington, won the ENTHUSE Award for STEM Primary School of the Year – supported by the Royal Commission for the Exhibition of 1851. Accepting the award on the school's behalf, Molly Fletcher and Gail Pughe said they were thrilled to receive this teaching support for their subjects, and that this was just the beginning of their amazing journey inspiring students into STEM careers.

"We were really surprised to win, but we were delighted," added Molly. "The judges were very impressed with our long-term vision for science, which is to inspire the aspirations of primary school children to consider STEM careers; and they also mentioned our outreach work with other schools."

#### **National recognition**

"As a college we have invested heavily in STEM over the last few years, by opening a dedicated £9m Centre for Maths & Science," explained John Laramy, principal and chief executive of Exeter College, which won the 2018 ENTHUSE award for the STEM FE College of the Year. "We also have a new £3m extension to our Technology Centre, partly funded by from the Heart of the South West LEP's Growth Deal funding, so that we can deliver programmes in advanced robotics, rapid prototyping and virtual welding."

To see the full list of ENTHUSE awards winners, visit stem.org. uk/news-and-views. To be notified when the awards open next year, register for email updates at STEM Learning's website (stem.org.uk)

Supported by Project ENTHUSE – a partnership of government, learned bodies, charitable trusts and employers – the ENTHUSE awards are part of the UK's investment in teachers to encourage more people into STEM related careers.

"By committing to their continuing professional development, these teachers are providing the best STEM education in the UK," commented the Baroness Brown of Cambridge. "They are passing on their enthusiasm and expertise to encourage young people to develop specialisms our economy so vitally needs. A massive congratulations to them all."



ABOUT THE AUTHOR Yvonne Baker is chief executive at STEM Learning.

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# INFRASTRUCTURE ESSENTIALS

Keeping your school ahead of the curve

#### DON'T BREAK THE CHAIN

When it comes to schools' ICT infrastructure you have to remember that everything is interconnected, and that a break at any point in the 'chain' causes things to slow, stall or stop completely.

In today's 'cloud-based' world, you need good broadband connectivity. Unless you have good internet connectivity you can't run solutions that are hosted in the cloud. like Microsoft Office 365 and the hundreds of teaching apps that schools use every day. The DfE estimates that there are approximately 1,000 schools that have inadequate connectivity, and another 5,000 that will fall below adequate standards over the next two years.

#### **Next links**

But there's no point in having a big internet 'pipe' to the door, if once you cross the threshold your wifi network is old and clunky, with wifi 'not-spots' and intermittent service. And, of course, you need to be running good network security, including web filtering and protection against viruses, malware and ransomware.

However, running good network security fails if your end user devices are old, or running out of date software which hasn't been upgraded with the latest software updates. And data is now one of our most important assets, but there are still schools that take a tape backup every day, and a member of staff puts it in their care and takes it home 'for safe keeping'. Have they not heard of GDPR?

#### The human angle

Which leads on to the biggest issue with technology... people. If people (both staff and learners) don't know what the policies are around security, usage, cyberbullying etc. then they will do either what they think is right, or what they want. Either can lead to problems.

One way to help avoid problems is better training. Most technology (hardware and software) is only used to a small percentage of its capability because people don't know how to use it properly. But training is one of those areas where spending has been cut back to make savings. As is maintenance. Technology will go wrong, and if you wait till it fails, you'll often end up paying more.

Clearly, what you need is an integrated IT strategy – because if every part is robust, it will be strong; but just one weak link can bring the whole thing crashing down.



By Neil Watkins, managing director of Think IT, a

**DfE** recommended

route for its Deals for

schools Guidance.



of schools feel there is probably, or definitely sufficient information available to assess the efficacy of edtech

Source: BESA



#### T&I RECOMMENDS



Weapons of Math Destruction (Cathy O'Neil, Penguin, £9.99) Many of the processes we take for granted, such as deciding whether somebody is creditworthy, are handled by computers. The machines use algorithms, and they in turn are based on precise mathematical models. In other words, the programs are objective and foolproof, right? Wrong! Unfortunately, as Cathy O'Neil reveals in this riveting book, the models are often constructed on the basis of flimsy data. No problem, one might say. All it needs is for people to point out the resulting errors, and someone will tweak the program. But the organisations that use the programs often don't understand them, and the companies that provide them guard their code and IPR jealously. The result is a combination of a pernicious feedback loop and selffulfilling prophecy: the computer says it, so it must be right. This book is a mustread for all students and teachers of computing. *Reviewed by Terry Freedman* 

# We are the **CHAMPIONS**!

**Michael Noonan** explains how pupils from his Barnet school recently collected the highest award on offer at an international robotics challenge...

ueen Elizabeth's has long been a highly competitive school in many areas of academic enrichment, but until three years ago only had a select few KS3 competitions where our competence in STEM subjects could be used. Up to the point of founding our VEX Robotics club, the only competitions into which we entered our students were the Shell Challenge and BP STEM challenge, in which we were national award recipients. However, upon hearing of the VEX Robotics Competition,

the department decided to fund two teams consisting of boys from years 8 and 9. The rationale behind this was twofold: to promote an interest in our subjects through the exciting medium of robotic competition, and to instil a competitive spirit among the boys to challenge the best schools in the country. Since its foundation, the club has gone from strength to strength, with demand for places outstripping supply of volunteers by an incredible margin.

#### **Exciting challenges**

Our method of promoting STEM subjects in this school is through the use of real life applications. As often as we possibly can, we make clear to our students just how useful the skills and practices which

#### "Our curriculum has been radically changed over the course of the last three years"

we embed in our lessons can be in real life situations and fields of employment. We aim to show students with an interest in any area of education, that the soft skills, creativity and problem solving which the STEM subjects provide can be used in almost any field - especially now that technology is such an integrated part of most professions. We also look to enrich our syllabus in as many ways as possible, running clubs teaching CAD skills, robotics and programming skills, workshop skills and advanced technologies: boys with an interest in this

from a more traditional svllabus which offered simple 'follow the guide' making skills, to ones which combine challenging project realisation skills. creativity, a wide range of technologies and integrated electronics. A good example of this would be the new Year 10 CAD project which aims to mimic the challenges and outline of the eventual GCSE Non-Exam Assessment (NEA) project which is undertaken from June 1st. It challenges the boys to develop a complex, functional mechanism for a camera aperture, and tasks them to research the most suitable mechanism, use maths and physics to calculate its chances of successes (through gear and linkage calculations) and then create a functional model either through 3D printing, 3D routing or laser cutting. The results have been phenomenal and the boys to have completed it most recently felt it was one of their most enjoyable and challenging projects to date.

#### The road to success

As I've mentioned previously, a huge factor that has piqued the boys' interest in STEM has been their involvement in VEX Robotics and the VEX Robotics competitions. At

#### subject area can satisfy their curiosity for learning as often as they choose through our plethora of exciting activities available. The impact of this focus on STEM has been superb. Our curriculum has been radically changed over the course of the past three years, going

#### **3 THINGS OUR EXPERIENCES CONTINUE TO TEACH US ABOUT ROBOTICS BEYOND THE CLASSROOM**

#### 1. Patience is key

As long as children are prepared to learn and accept setbacks as a part of the creative process, it is possible to achieve great results once the outcome to a project is final. For Queen Elizabeth's to not only compete, but to win such prestigious awards at VEX UK and VEX World Championships required a great deal of effort, perseverance and commitment from all involved.

#### 2. Getting creative reaps benefits

When a new VEX season begins, schools involved are given a game challenge and are tasked with building a robot capable of successfully scoring points using the game elements provided. Although there are standard robot builds that VEX make you aware of, capable of scoring points throughout the game, our students use their innovative skills and will create unique robots that follow customised designs to increase their chances of winning at competition. This is one of the key factors to their overall success.

#### 3. It's not complicated

Even as a teacher the prospect of using a system like VEX IQ or VEX EDR may seem daunting, but in actual fact the resources available are very useful and it's fairly straightforward once you get started. It's an incredible teaching tool that offers kids the opportunity to enhance so many skills, both personally and academically.

this year's UK national finals, we had several teams competing for the top awards given out at the event. Using robots designed and built themselves, the boys and their respective teams amassed some of the most coveted awards available; these were decided by experienced STEM ambassadors and industry leaders from around the country. The boys were marked in line with specific criteria based on their robot design, programming skills, driving skills and STEM research project.

Competing at the VEX UK National Championships is a fantastic way to really display how much the teams are excelling in all aspects of STEM, including programming, engineering and of course, robotics. The fact they had so much success this year is a real testament to their abilities as a group, and when they are competing against other schools from around the country it is a reminder of how much they are learning and developing not only as a team, but as individuals.

#### **World leaders**

Following their success at the VEX UK Nationals, two teams from the school won a place at the VEX Robotics World Championships in Kentucky, USA, as part of the VEX IQ Challenge. The school managed to raise sufficient funds to get the kids to the competition and they began preparations to test their abilities against some of the best young robotics minds in the world. Incredibly, the school were crowned winners at the event, collecting the Excellence Award - the highest award on offer.

It was a great honour to become the first UK school ever to bring home



such an accolade in the Guinness World Record breaking competition's 11-year history. In doing so, the school prevailed against teams from the US and China, who have traditionally emerged victorious. By winning their age category, the boys from Gear Squad and Technogear – our two teams – triumphed ahead of a staggering 400 groups competing from 40 countries. As a school we couldn't be prouder of what the students have achieved.



ABOUT THE AUTHOR Michael Noonan is head of technology at Queen Elizabeth's School, Barnet

# How to refresh your devices... ONABUDGET

Upgrading essential IT hardware without breaking the bank might seem like an impossible dream - but it can be done, argues **Simon Harbridge** 

n 'IT refresh' is probably not something to be anticipated with unadulterated joy, especially when budgets are even tighter than when the last tech replacement was completed. But, to keep the school IT estate running smoothly for both students and staff it is a task that needs to be tackled on a reasonably regular basis.

Refreshing your IT provides a consistent service for students, helping to enhance learner concentration, progression and attainment. It will impress parents, reassuring them that your school is capable of providing technology efficient enough for pupil engagement and development, and showing them you're serious about improving teaching and learning outcomes. And of course, it will also give your school the opportunity to assess the direction in which you want your infrastructure to go, and to evaluate the costs and benefits of trying something new.

Having decided to go ahead, then, you will inevitably come to the long-standing dilemma of where to spend those limited funds – do you opt for laptops, AV, or something else? How do you keep up with the growing pressure of ensuring students are 'future-ready'. with investment into emerging technologies to help bridge the STEM skills gap? What options are available when trying to achieve all this on such a stretched budget?

#### Something new

Investing in brand new IT hardware when it comes to your refresh often seems like a logical step to take, particularly since the enforcement of the computing curriculum back in 2014, which requires secondary school students to learn programming skills within the classroom in a bid to fill the UK computing skills gap. 90% of today's occupations require employees to possess some form of digital skill, so it's important that every school

"Buying first use equipment isn't something every school can achieve these days" provides access to solid and reliable ICT facilities to ensure all students are being taught these key skills effectively. There are a number of benefits to investing in brand new hardware:

• You don't need to worry about who might have been handling the device before you because it's come straight off the production line, so there's no chance of finding any wear and tear or blemishes, if you're concerned about the aesthetics of the equipment.

• You'll most likely get a better support package and warranty. Whilst most refurbished devices are supplied with a guarantee, it may not be as lengthy as it would be for a brand new device. Apple's certified refurbished products offer a one-year warranty – the same as new purchases. However, many other reputable companies may only offer three months' cover for reconditioned equipment; and while this will deal with any immediate issues, there may be little to no support after that time if anything goes wrong. In contrast, depending on the manufacturer, you could get a 3-5-year warranty on new products.

• Depending on your requirements, you can be sure you're in possession of the most cutting edge technology needed to enhance the learning experience in the classroom.

If these points resonate with you, then purchasing brand new devices might be the better option. But buying first use equipment isn't something every school can achieve these days. And even if your funds will just stretch to cover the cost, you may find yourself left short when it comes to other important – and possibly unexpected – investments that are required.

#### The refurb route

Luckily, whilst is is crucial to ensure students are equipped to learn how to fill the digital skills gap, you can also achieve this goal



with another option: investing in old hardware. Don't panic, this doesn't mean an Acorn Archimedes computer with built in floppy disk support; no, I'm talking about devices that are a few months to a few years old, that have been refurbished. In other words, they have been returned to the manufacturer or an approved refurbisher, internally and externally cleaned, and cleared of any defects.

There are risks that come with purchasing reconditioned devices, but these can be largely eliminated by knowing what you want and

from whom who you are getting it. And it's a choice that can have many advantages for your school:

• Price! Going down the reconditioned route can save you a considerable amount of money – from 10% up to 40%. The savings you make by purchasing reconditioned devices will allow your budget to stretch further, and you may even be able to buy more equipment that might not have been possible if you'd decided to go for new.

• Just because the costs are less, it doesn't mean the devices won't perform as well. Refurbished devices can work just as well as a brand-new piece of kit and there's no guarantee that just because you've invested in the latter, they're going to be fault-free, anyway – due to manufacturing errors, faults develop in around 5% of brand new hardware within the first year. So actually, you can take comfort in the knowledge that a refurbished device will have been sent back to an approved refurbisher and all necessary repairs made, thus bypassing the initial 'first year failure rate'.

• Depending on your IT needs, reconditioned devices can have just as many of the features you're searching for as a new device, and if they lack what you're looking for, you can sometimes upgrade components such as hard drive and memory. It's a good idea to carry out your research by comparing the features you're looking for with the new and the refurb device, to establish if you could carry out any upgrades on the latter with the specs you're after.

If you're after equipment that's in pristine condition, then refurbished may not be for you, but if you want devices that are considerably cheaper than those with no previous owners – but work just as well and possess the same specs you're looking for then refurb should be a serious consideration for your IT refresh strategy. In any case, though, the good news is that as long as you complete your due diligence there isn't a wrong answer when choosing between old versus new.



ABOUT THE AUTHOR Simon Harbridge is chief executive officer of Stone Group (stonegroup.co.uk)

# What's next for CASHLESS CATERING?

Automated payment systems are working well in countless schools across the country – but there may be challenges ahead, warns **Qamile Zejnullahi** 

ashless catering solutions are now common up and down the country. Lots of schools use them to run more efficient, quicker and attractive catering operations, all designed to encourage more students to get a healthy hot meal daily. But what challenges have schools got to keep in mind over the next 12 months and beyond – to ensure they continue to get the most out of cashless catering?

#### **School meal inflation**

UIFSM (Universal Infant Free School Meals) is an important and mandatory part of every primary schools' catering operation. Since 2014, children in reception classes, and in Years 1 and 2, have been entitled to free school meals. The government pays schools £2.30 for every free meal provided.

However, the amount was based on evidence collected back in 2012. Of course, things are a little different now and inflation means that the  $\pounds 2.30$  contribution no longer covers the cost of UIFSM effectively. This problem will only get worse. In fact, The Educational Policy Institute predicts that by 2023-24, schools could face an extra £109 million bill if the per meal rate is not increased. As of yet, there is no sign of a government review of the contribution, so schools are faced with the challenge of doing more with less in the coming years.

#### **School demographics**

Talking of schools doing more, there is one very simple factor that is going to make school catering harder in the future, particularly in secondary schools: and that's population growth. A baby boom from the early 2000s is working its way out of primary schools and into secondary education right now.

Schools and their canteens are going to be handling more students than ever before as the impact of population growth begins to bite. The government actually predicts some 654,000 more school places will be needed by 2026. That's a nine per cent rise in pupil population. More students, if not handled efficiently, will lead to longer queues and catering services that are off-putting.

#### **Tackling obesity**

An unpopular, less well-used school canteen. contributes to another growing issue. It's been widely reported this year that Britain has a problem with childhood obesity. Children are leaving primary school overweight or obese too often. It's predicted that the current generation will be the first in 70 years to be less fit than their parents. The factors in childhood obesity are wide ranging, but unhealthy packed lunches and the explosion of fast food restaurants near schools are certainly part of the problem. There were 16,160 fast food restaurants recorded near schools in 2017 – and too often children use them either at lunchtime or as soon as the day's lessons are over. When schools can encourage children and parents to use their catering service they help

tackle the problem. When meals are paid for with a cashless system, parents don't have to give their children cash that they might end up spending outside school.

This does mean that schools are not only under pressure to operate catering with less money, for more students, but they also need to ensure food health standards stay high.

#### **Benefits change**

Cashless catering and the management of FSM (Free School Meals) is very important to schools in the wider context of their funding. Each school's pupil premium funding is granted on the basis of how many students are signed up for FSM. Therefore, it's important for schools to encourage as many FSM eligible students to sign up as possible. When they don't, both the student and school miss out.

"The difference good, healthy food can make in children's lives is being recognised" As schools will know, the benefit system has changed in Britain. Universal Credit has replaced the old system. While children on FSM already will remain entitled to it while still in education, in the future, the threshold for FSM has changed. The old, more complex system has been replaced with a simpler approach, and families with an income of more than £7,400 before

benefits will not qualify. The government believes this change will actually result in 50,000 more FSM eligible students by 2022. Schools need to be on top of the change and encourage as many eligible families as possible to sign up for FSM.

The challenge is that it is widely acknowledged that many parents don't claim FSM because of a perceived social stigma. However, a cashless catering system can help battle this. Students receiving an FSM allowance get to spend it in the same way as any of their peers in a cashless catering system.

ABOUT

#### Out of hours meals

Another trend schools should be aware of is the expansion of school catering beyond normal break and lunchtime periods. The difference good, healthy food can make in children's lives is being recognised and school catering services are being expanded in a number of ways beyond traditional hours.

Breakfast clubs, for example, are becoming more common, and can make sure children get a good start to the day. What's more, trials of such clubs are being supported by the government. Some schools are taking the initiative a step further with evening

1

10

meal clubs too.

Then there is the issue of school holiday hunger. FSMs make a huge difference during term time in many children's lives. However, when the meal is taken away during school holidays, the same young people suffer. That's why we have seen a push by many schools to provide out of term time food services to families that are struggling to make ends meet.

#### **GDPR**

And last, but certainly not least, our old friend GDPR. It's something schools really do need to consider when implementing cashless catering solutions both now, and for future incoming students. If your cashless catering uses identity management, then personal information will be stored on your system. Schools need to ensure that, even when it comes to catering systems, they are remaining fully compliant with the new GDPR rules and are managing user data properly.

The development of cashless catering has delivered some big successes in many schools in the last ten years or so. Now it's time to take stock, recognise the upcoming challenges, and ensure that record is maintained.



**THE AUTHOR** Qamile Zejnullahi is director of marketing at BioStore

teachwire.net



# Cost-effective cashless catering to improve kitchen services, increase meal uptake and reduce admin

**BioStore's FasTrak solution** allows schools to implement a cashless catering system quickly and painlessly. Our experts will listen to your school's requirements and then collaborate with you to create the perfect solution.

With as little disruption to operations as possible, BioStore helps you adopt a system that increases school meal uptake, improves inclusivity and reduces kitchen cost.



#### **STREAMLINE CATERING SERVICES**

Solve many of the administration problems faced in operating a canteen environment by removing cash from campus, reduced queuing, improving meal uptake and minimising food waste.



#### **RELIABLE ATTENDANCE & REGISTRATION**

Keep track of students with a flexible registration and attendance solution. Teachers can keep an eye on registration, view attendance reports, and view realtime status updates when students register in or out.



#### **CLOUD ENABLED FOR EASY DEPLOYMENT**

BioStore's Cloud Solution means simple set-up, less admin, and reliable hosting. It keeps IT costs to a minimum when implementing our range of applications, including cashless catering and attendance monitoring.



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Ensure personal data in your system is protected, audited and fully under your control with BioStore's Cloud Backup and Recovery solution.

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# GDPR and identity management



Nigel Walker, managing director of BioStore, explains the GDPR cycle of compliance schools are facing...



## T&I What does GDPR mean for identity management in schools?

NW Many of us would like to think GDPR is behind us now the compliance deadline of May 25th has passed, but that's certainly not the case, especially in the education sector. With each new intake of students, schools receive new data to manage. Identity management systems linked to school management information systems are one of the best ways schools can handle this annual influx seamlessly. As such, identity management now and in the future will need to remain compliant with GDPR to continue to be an effective tool for schools.

## Why do schools use identity management solutions?

BioStore's identity management solutions are implemented by schools because they streamline daily operations so they run smoothly for staff and students. Students have a simple means of authentication they can use to verify who they are throughout the day, and their ID can unlock access to all different kinds of facilities, applications and services. At the same time, BioStore identity management also enhances security. Unique identifiers for authentication ensure only approved students (and teachers) can access certain restricted locations or services. From a practical view, BioStore identity management is also convenient for students, who only have one authenticator to remember, whether that's a smartcard, biometric or password.

## What information does identity management require schools to store?

An identity management system will hold what is termed in GDPR regulations as standard information simple data such as names and other basic information. However, systems could also require what GDPR would define as special category data, such as biometric data. This kind of potentially sensitive data is subject to stronger restrictions under GDPR, so that's why BioStore uses the strongest encryption to protect the biometric data it stores. BioStore's identity management solution would also collect data on all the transactions and interactions made by each individual account on a daily basis - which enables much better auditing of systems.

## What new demands does GDPR put on schools?

GDPR's focus is on demonstrating how and why organisations store the

data they hold in a bid to create trust between the organisation and people they serve. Schools need to be able to show that they store data related to individuals in a secure way and with appropriate restrictions on its access. More than that, should an individual want to see what data related to them is being held, or even have it deleted, schools need to be able to respond quickly. Organisations were always required to store and protect data in secure ways: the key difference now is that they need to be able to clearly demonstrate how the regulations are being met.

#### How can schools implement identity management in a GDPR compliant way?

To implement identity management solutions under the new GDPR regime, it is vital that organisations store data in secure and auditable ways. BioStore uses strong encryption to achieve this as it provides strong defence to outside attackers, but also gives organisations the platform to place strong internal controls over who can access data. This ensures limited and reasonable use of data, as only those approved have visibility. If anyone ever asks to see the data held on them, schools know exactly where it is and who has had access to it. BioStore's strong backup and recovery solution is a very important part of GDPR compliance too. Under the new law, schools must be able to recover lost data quickly. On top of that, they must have the means to permanently delete data and any backups if requested. Finally, it's important schools gain explicit consent from pupils and parents to hold and securely store biometric data. We always offer an alternative, like a smartcard, so students can continue to use the system should consent not be given.

To find out more, visit biostore.co.uk

# *Learning in a* **NEW DIMENSION**

Without great teacher training, students won't experience the full benefits of 3D print technology, warns **John Bensalhia...** 

s a fresh. innovative method of providing creative opportunities for pupils, the 3D printer has the potential to prove a technological marvel for schools. "Understanding and using 3D printing can benefit children's learning particularly in STEM subjects, but also beyond these more traditional fields in music, design technology, history, geography, biology and more," confirms Simon Biggs, education outreach executive at global engineering technologies company, Renishaw. "Exciting and innovative 3D printing projects are also a simple way to keep pupils engaged in STEM subjects, which is a vital step forward in addressing the skills shortage in this crucial area."

However, teacher training is key, as Simon goes on to explain: "Educators need to be able to convey to young people how the skills and knowledge they gain in the classroom will relate to what happens in the world of industry and business," he insists. "Without this context, the future advantage of what students are learning may be lost. Dedicated CPD sessions are extremely useful, whether face to face or with the support of training videos that are uploaded to the internet by many 3D printing companies."

Renishaw also offers its Fabrication Development



Centre as a "unique educational resource for hands-on learning." It includes two classrooms (staffed by a qualified teacher and Renishaw's STEM ambassadors), and state-of-the-art equipment. "The aim is to inspire young people and to encourage a pipeline of talent into STEM careers," says Simon. "Schools or groups of young people can use the facility for lessons or workshops, completely free."

#### **Time and variety**

Paul Boyd runs bespoke courses based on teaching and learning for D&T and STEM, with his partner, Julie – and argues that training in specific areas, such as timing, can make a huge difference to outcomes. As he points out, when you are trying to print off products designed by 20-30 students in a single class, it can be a logistical nightmare. "With an average time exceeding 20 minutes per object, it's a difficult prospect," he says. "However, there are ways to get around this problem, including adding several individual objects in one print, limiting the size of a product as part of a design brief, or printing after the lesson."

Paul is also concerned that, without the right support for teachers, 3D CAD can become an instructional-based lesson with all students creating the same objects, and little to no differentiation for higher or lower ability students. Training can lead to the delivery of more "learning based lessons", starting with sketching ideas, then introducing design constraints and getting learners to come up with

stories around the initial concepts, for example.

#### An exciting future

"Once any potential issues are overcome, 3D printers offer great learning facilities for pupils," Paul concludes. "The technology is becoming quicker and smarter; and if schools are able to invest on something just a little more pricey than an entry-level machine, they'll be rewarded with greater efficiency and speed, plus less hassle and a higher quality end product."

According to Simon Biggs, the increasing numbers of 3D printers in schools is due both to the increasing recognition of the technology as a relevant and engaging educational tool, and to the range and availability of low-cost machines. "It is now possible for schools to buy a 3D printer for around £500," he observes. "The decreasing price tag is certainly drastically improving the technology's pick up in the education sector.

"With the reduction in cost of materials and printers, and schools' focus on active learning and addressing the skills gap, it would be logical for 3D printers to become a widely used educational tool in years to come."



ABOUT THE AUTHOR John Bensalhia is a freelance journalist with more than 18 years' experience Modern print management can transform how your school works - as **Sophie Beyer** has been discovering...

nnovation in printers is no longer just about running off multiple trigonometry tests for Y9 cheaply (although that's possible, too). These machines are now being reinvented as multifunction devices (MFDs), which automate printing, copying, scanning and filing – and that's just for starters.

Ian Pickles, business manager at Kings School, a Hampshire secondary, has direct experience of how printing has become more joined up in recent years. "Kings had a fleet of disparate models," he explains, "and teachers had to run back to 'their' printer to pick up their work. Then we rolled out a Canon fleet, supported by Uniflow, which made a dramatic difference in how printing was managed around the school." MFDs can now automate tasks to save

staff time. Although – alas – no one has yet invented a printer that ensures pupils take a letter home, it's now possible for school reprographics to do pretty much everything else - and here are five hugely useful examples of the kind of thing we're talking about:

#### 1. Cut costs

"With IT budgets squeezed. managed print solutions offer a way to reduce an uncontrolled cost by an average of 20-30%," says Neil Sawyer, HP's UK education director. Meanwhile, Andrew Nixon from Konica Minolta suggests using DofE recommended procurement frameworks to reduce outlay. Kings School saved a further ten per cent when they renewed with Canon through the Crown Commercial Service framework.

#### 2. Take control

Schools can set up their own print management rules, to ensure teachers, administrators and pupils get what they need. It's simpler, more secure, and there's less waste, as the printer won't print until the user is authenticated. Biometrics are already being used within some school catering systems, so

Kvocera, for example, can bring in Biostore, which gives schools the option to increase security. Audrey Pickering, public sector account manager at the company, says, "Managed print can limit the size of documents. We can also automatically stop students accidentally printing a 200 page document, and only certain users have access to colour. Schools have control of printing but without stopping productivity."

#### 3. Start publishing

MFDs offer new capabilities inside and outside the school. Scanners link to the cloud, file, and automate teachers' work. They can also print banners and booklets: services which can be shared or sold to the local business community. Kyocera now offers automated scanning to reduce admin and teacher work; printers can scan documents direct to pupil records, and link to reporting such as SIMS. "Kyocera's MFDs allow teachers to set up auto-marked tests. reducing teacher workload, plan their lessons and improve results without having to take home marking," points out Audrey. "It has proved very popular, a number of UK schools have already got this in use."

#### 4. Boost creativity

Specialist machines support

creativity in schools. Each department will have different requirements, as Ian Pickles explains. "In the main office at Kings School we need high volume black and white, and specialist printers to do print binding. In our art and media department, colour control is very important for media manipulation. Specialist colour management is delivering exactly what the teachers and pupils need." Firms like Canon supply wide format so students can design their own wallpaper or print banners, and Konica Minolta supplies 3D printers too.

#### 5. Future proof

How do the MFDs integrate with BYOD/mobile? "These days, totally seamlessly," confirms Neil Sawyer from HP. "We have put a lot of investment into HP Mobile Printing for schools. HP e-Print, for example, allows students and staff to print from their mobile devices to any school printer, while importantly keeping your data safely within the network."



ABOUT THE AUTHOR Sophie Beyer is a freelance journalist who specialises in education and technology.

# ALL SYSTEMS GO...

The right MIS will keep your school running smoothly, says **Nina Iles** – so how will you know if that's what you've got?

chool leaders across the UK have a multitude of responsibilities to manage on a daily basis. Society - and government - look to our headteachers to provide a safe, comfortable and stimulating environment for their pupils, within which these children will thrive and cultivate a thirst for learning. We expect the teachers under the guidance of these same school leaders to be working with them to deliver all of the above and then some: educating, encouraging and exploring pedagogy and potential against a backdrop of assessment, resource shortages and increasing class sizes.

Headteachers and their senior leadership teams (SLT) are, in short, charged with overseeing

the smooth running of their respective schools, keeping expenditure within budget, while supporting their teachers and TAs to deliver the best possible outcomes for each child that passes through their doors. Sounds challenging? Even more so when we consider what actually goes into ensuring the 'smooth running' of a school – I'm not a school leader, but I realise it's an extremely complex undertaking. I have huge admiration for all of the headteachers I know and whose schools I've been privileged to visit.

This much I do know: the management of a school, and the learning its teachers foster among pupils,require measuring: learning outcomes are assessed not only to demonstrate effective teaching and learning, but to also illustrate in a timely fashion those pupils who will benefit from extra support.

Moving away from the practice of teaching and learning momentarily, a school's infrastructure must also be regularly audited and maintained. Ideally, every school will have a way remotely to communicate information and alerts to its staff and, increasingly, with its students and their parents too. Headteachers need to ensure that their school has systems in place to manage behaviour, track attendance, manage visitor information, produce timetables - not mention the need for robust financial, personnel and document management systems.

#### **Clear choices**

Enter the school Management Information System (MIS), a giant among software solutions, designed to support school leaders with the monitoring, recording, assessing and reporting of all of the above and often much more. Guidance from the Department for Education for selecting an MIS states that such a system should provide, among many other things, "The facility to enter and store all data items required for management of the school, including information to monitor and support pupils, manage staff, manage school assets and facilitate planning." BESA, the British **Educational Suppliers** Association, is the trade

association covering the entirety of the UK educational suppliers sector The association represents over 300 such suppliers and has within its membership several trusted providers of school MIS systems - and that's important, because choice is important. Each school is unique. Each will have different needs and requirements from an MIS, so it's good that there are so many trustworthy providers for them to consider. In order to help its members navigate the market and to appreciate the challenges faced by school leaders BESA has, for the past twenty years, surveyed headteachers and ICT leads to capture their thoughts and behaviour patterns around the application of - and reservations about - ICT in schools. More recently, BESA has introduced a new annual survey, in association with the National Education Research Panel (NERP) to gain insights into how school leaders are applying the use of educational technology (edtech) in the classroom, with an additional survey looking at how schools are using edtech to reduce teacher workload, including a particular focus on their use of MIS solutions.

#### **Mixed responses**

BESA's latest report on how schools are using edtech to help them manage teacher workload uncovered some interesting findings. The survey was fully completed by 388 schools, with the "The management of a school, and the learning its teachers foster among pupils, require measuring"

sample split across 220 primary and 168 secondary (LA and academy). Its findings were shared with BESA members in May 2018. Perhaps somewhat surprisingly, only 21% of the survey respondents from primary schools said that using an edtech management system positively impacted on their workload. However, that figure rose significantly to 57% of respondents from secondary schools, with those who are positive about edtech management systems supporting workload being likely to indicate saving three or four hours a week.

The same survey findings identified a lack of training in the use of edtech solutions as being one of the main barriers to update in primary schools, with 44% of respondents indicating that teachers often prefer to stick with what they know; although while lack of training was also cited as an obstacle to edtech uptake by secondary school respondents, only 25% of them indicated a preference to stick with the familiar.

Most recently, BESA's EdTech in English Maintained Schools, which attracted a response from 681 schools (437 primary; 244 secondary), showed that the use of school MIS is generally high across both the primary and secondary schools that completed the survey. The report's findings indicated that 64% of respondents found management systems are considered to be "very important" to support the effective running of their schools. However, 39% of those who completed the survey felt that [some] teachers in their schools are considered not to be making effective use of the edtech management systems that are in place.

When asked if

management systems are able to reduce time and cost in managing and delivering teaching and learning, more than three-quarters of the secondary school respondents stated them as "very important" in this process, however there remains a small number of primary schools who are not capturing or recording time and costs benefits from using these types of systems. The same survey highlighted a strong demand for parental communication systems in the primary sector, with an increase in demand for learning management systems and CPD over the last year.

#### Supplier support

BESA's latest survey seems to indicate that there has been a definite shift to more education professionals understanding the important contribution management systems can make in supporting leaders

#### **TEAMS TO TRUST**

All of BESA members have signed a code of practice putting people and integrity at the heart of their businesses. More information about the companies in BESA membership, including the many who provide MIS solutions, can be found at besa.org.uk.

in the effective running of a school, with 100% of respondents from the secondary sector and 98% from the primary sector saying they make use of an MIS. Other types of managements systems used by both sector delivered solutions for parental communications; assessment; learning management and parent pay systems.

Half of the primary schools and three-quarters of the secondary schools who fully completed the survey clearly and strongly identified with the value that edtech management systems can have on reducing time requirements by both admin and teaching staff. That's good news for both teachers and suppliers alike. School management systems are fantastic tools when used to their full potential. Key to this is training, and that is dependent upon a solid relationship between the supplier and the school. In my view, there has to be a robust support network in place and an excellent customer experience upon which an ongoing and meaningful relationship can be built between provider and customer.



#### ABOUT THE AUTHOR Nina lles is head of EdTech at BESA



# *The same* DIFFERENCE

Its scenery may be spectacularly exotic – but the edtech landscape in South Africa looks surprisingly familiar to UK eyes, as **Stephen Woollard** discovered...

he dark always makes it difficult to get your bearings in a new place, but when my plane touched down in Johannesburg I could tell was that South Africa was buzzing. Compared to Kenya and Uganda, where I spent some time teaching many years ago, the country seemed far more developed; and during my whirlwind week spent there, this was a theme that persisted.

Before I go into any more detail about my visit, I should probably explain how I got there in the first place. Essentially, it was blind luck; I had entered my name into a prize draw at the Bett show in January after spending some time with ITSI, a pioneering edtech provider based in South Africa. A few months later, I found out that I had won a trip to explore the company's home country and some of the schools it works with. I was thrilled; it would be a sort of edtech pilgrimage.

#### Varied settings

I had a long list of goals for my time in South Africa: seeing how schools were using technology to enhance learning experiences was at the top of it, but I also wanted to hear from students and teachers to understand the context. Oh, and I also wanted to exercise my photography skills a bit, as I knew there would be no shortage of opportunities to capture some extraordinary images! I was particularly interested in how South African schools were using the ITSI

platform, which blends technology with traditional teaching methods by using e-books and student data to encourage deeper engagement with content.

I was able to visit seven schools during my week-long visit, ranging from primary to tertiary, public to private, and even special education needs provision. Every school that I visited was filled with students who were not only extremely polite and respectful (going so far as to stop their conversations if I was passing, and listen to me with genuine interest), but also ambitious and passionate about learning.

#### Joys and challenges

In order to understand the challenges that schools in South Africa face I spoke with leaders and IT specialists about their lives, as well as the joys and hurdles they have come across in education, to see if they were anything like to those we experience in the UK. I learnt that there are indeed many similarities - and in fact, I suspect quite a few of them may well be universal.

I discovered, for example, that teacher workload is also a concern for teachers in South Africa and how anything that can be done to lessen is welcomed by everyone working in education. However, perhaps one of the biggest connecting points I found was how all of us in the profession are trying to find ways to face the challenges that a rapidly changing world brings, and understand how best to

prepare our students for that world in the future. Teachers discussed

with me the importance of having innovative technology in the classroom, placing emphasis on the fact that everyone must be invested in order to lead students and schools to success. Notably, they shared their belief that schools need digital leaders to drive ideas and show others the value of technology in education.

#### **Forward together**

A key takeaway for me has been the way many teachers single-handedly instigate and gear shift the way students are learning in response to developments and opportunities, and how they deliver their subjects. When new technology – like the miEbooks app – is introduced, everyone gets on board and is committed to working it into their curriculum.

In short, the students, teachers and principals that I met during my time in South Africa were all ready to learn about and embed technology in all areas of school life. Most importantly, though, I came away with the reminder that the global education community can benefit so greatly from learning from one another and sharing experiences.



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