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2016/17

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TECHNOLOGY + INNOVATION

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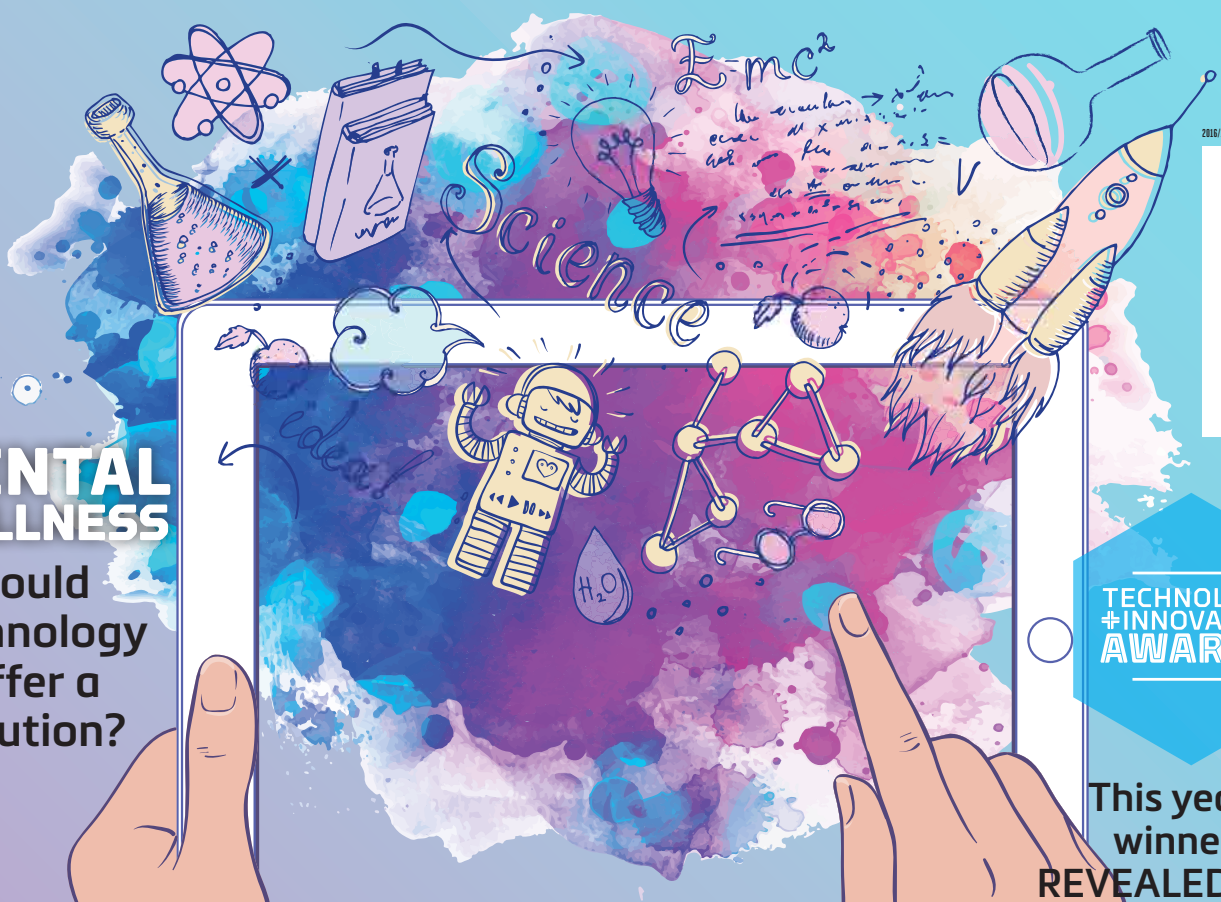

2016/17 EDITION | PRICE: £4.99

MENTAL WELLNESS

Could technology offer a solution?

TECHNOLOGY + INNOVATION AWARDS

This year's winners REVEALED (p10)

Sir Ken Robinson:

"Extraordinary changes are ahead"

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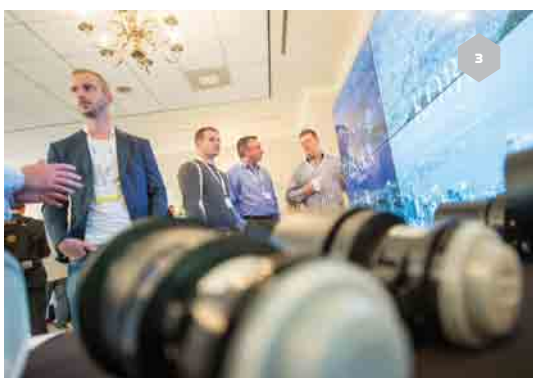
SAHARA CLEVERTOUCH SHOWCASE 2016

Don't miss out on the best kept secret in education technology...

CLEVERTOUCH

The Intuitive Digital Experience Made for Education



At Clevertouch, everyone understands just how important it is for potential technology buyers and users to try out the latest interactive touchscreen innovations, software and apps before introducing them into schools and colleges. That's why the company is part of the Sahara Presentation Systems Showcase, an annual gathering of leading educational technology brands featuring live tutorials, demonstrations, multimedia presentations and the latest technology innovations.

Situated at Hanbury Manor in leafy Hertfordshire, the fully catered exhibition takes place on the 7th of October 2016, and education end users are invited to attend.

With a dedicated Clevertouch, Software and App Zone, all Clevertouch interactive screens will be on show including the Clevertouch Plus and newly launched Clevertouch Pro for secondary and higher education. This is an opportunity for current users or those wishing to familiarise themselves with Clevertouch to interact with education technology in a relaxed, non sales environment.

As you like it

Clevertouch software partners, DisplayNote and NUITEQ (Snowflake), will demonstrate their software showing attendees how to maximise their use in the educational setting. And popular app developers featured in the new look Cleverstore, which is launching at the event, will be running tutorial sessions on how to incorporate apps into the curriculum and using app teaching dashboards.

Teachers are also being given the opportunity to nominate tutorials they would find most helpful via the registration page. So, whether you want to know about how to implement collaboration software, find out about the latest teaching apps, get more out of your interactive display or learn how to plan engaging lessons in a matter of minutes, the Sahara Showcase is a not to be missed event.

A full list of tutorials and demonstrations will be announced nearer the time.

With competitions every hour, registered attendees can win a selection of the latest personal gadgets and technology must haves.

TAKE A LOOK

For more information, to register or to nominate a tutorial please visit showcase.clevertouch.co.uk *

*Registration closes on October 1st 2016

Welcome...

...to another issue of Technology and Innovation magazine, and the beginning of a new academic year; are you ready to get started?

The world of education has always been a fast-moving one, of course – but thanks to the astonishing pace of technological developments over the past decade or two, it can sometimes seem as though today's classrooms are barely recognisable from one September to the next. As well as the eager faces of a fresh batch of Year 7s, the end of the summer break is quite likely to see teachers presented with upgraded hardware; improved systems and infrastructure; ever more powerful gadgetry in students' pockets; and an apparently endless supply of apps promising to transform teaching and learning with just a few swipes of the latest screen... not to mention the inevitable reams of research both celebrating and criticising the impact of technology on teaching and learning throughout the system.

So yes, things change quickly in the exciting edtech sector – but there are a few constants; and one of those is the adamantine truth that every decision we make in schools should be based first and foremost on the needs and aspirations of the young people within them. Technology – however brilliantly designed – is nothing without the sound underpinning of clear pedagogical principles as well as a team of dedicated professionals to support the learners who will be using it; and putting procurement before a carefully thought through strategy for implementation will rarely lead to the improvements in outcomes we would hope to see after any serious ICT investment.

All the ideas, advice, opinions and resources you'll discover as you turn these pages have this understanding at the core. From the intriguing possibilities offered by robotics, 3D printing and virtual reality to empowerment through assistive software and improved communication, everything is considered in terms of how it will help students and enhance their experience of education. We move well beyond theory, too, with plenty of stories from schools where technology is already being used in a whole range of interesting ways to increase engagement, boost achievement and ensure staff can spend less time on tedious-but-essential tasks, and more on the planning and delivery of creative, inspiring lessons – right across the curriculum.

Have a great year!

Helen Mulley, editor @Teachsecondary

MEET THE EXPERTS


Sir Ken Robinson is an international educator, speaker and author.


Claire Armitstead is headteacher at Rhyl High School.


Lucy Collins is an exams intervention and access assistant at Priestnall School, Stockport.


John Dabell is a teacher, author and trained Ofsted inspector, as well as a reviewer of educational resources.


Mark Anderson is a former assistant head teacher, lead teacher for ICT, head of computing, and the author of Perfect ICT (Every) Lesson.


Nicola Whitton is a professor of education at Manchester Metropolitan University.


Sal McKeown is a freelance special needs journalist and author.


Paul Andrew is a science teacher at Burnt Mill Academy, in Essex.


Irene Picton is a project manager with the young readers programme at the National Literacy Trust.


Patrick Carroll is a Naace member, and head of English and ICT at Shaw Wood Academy.


Anna Blewett is a freelance journalist with a keen interest in the education system.


Guy Snape is a music teacher, writer and photographer.

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In this issue...

Classroom inspiration

School solutions

Creative CPD

Infrastructure essentials

zoostorm

DELTA

GREAT FOR EDUCATION

There are many types of computers available today, but for most schools, the desktop PC remains the number one choice for classroom computing. There are many factors to consider when installing the latest PCs into your classroom. How big is the PC desktop footprint? Can it be used in a variety of settings? How much noise does it make? How much energy does it use?

The Zoostorm Delta range is built to deliver the best in technology for education and meet the rigorous demands of the classroom, facilitating the ultimate learning experience for pupils and students alike. All our small form factor desktop PCs are light, compact and durable. They are designed to use the minimum amount of space in the classroom and feature up to 8 years design life. Installed with Windows 10 and the latest Intel i-Core chipset, the range delivers outstanding performance plus an 85% PSU efficiency, which helps keep those energy bills down.

Zoostorm Delta PCs can assist with the more modest aspects of classroom activities from emailing to word processing; from exploring the internet, through to editing images, video or audio through to complex graphic design. We understand that technology is synonymous with innovation, creativity and when embedded into lessons; our small form factor systems can be used, not simply to enhance, but to transform teaching and learning throughout the curriculum.

All Zoostorm Delta desktop PCs come with 12 months warranty for peace of mind and to protect your IT investment. Also available is a dedicated Customer Support and IT Help Desk.

ZOOSTORM DELTA MICRO

ULTRA SMALL FORM FACTOR DESKTOP PC

Delivering exceptional classroom performance and addressing the need for smaller, quieter devices, the Delta Micro is equipped with improved 'Storm Coat' paint durability and scratch resistance, a minimum 8 year design life, fans rated for over 50,000 hours and 85% PSU efficiency.

PRODUCT CODE: 7240-6079

- **Windows 10 Home**
- Intel® Core™ i5-6400 Processor
- 8GB RAM
- 128GB Solid State Drive
- DVD/RW

PRODUCT CODE: 7240-6075

- **Windows 10 Home**
- Intel® Core™ i3-6100 Processor
- 4GB RAM
- 128GB Solid State Drive
- DVD/RW

Windows 10 is the best combination of the Windows you already know, plus lots of great improvements you'll love. Technologies like InstantGo* let you boot up and resume quickly, everything runs fast and smooth, and Windows 10 devices now have Battery Saver to automatically conserve power – so you can work longer and play harder. For total confidence, Windows 10 helps you stay up to date and has more built-in security features.

*Hardware-dependent

BESPOKE CONFIGURATIONS AVAILABLE. CALL FOR PRICING:

Zoostorm recommends Windows.

Windows

ZOOSTORM DELTA ELITE
SMALL FORM FACTOR DESKTOP PC

PRODUCT CODE: 7240-6077

- **Windows 10 Pro**
- Intel® Core™ i5-6400 Processor
- 8GB RAM
- 1TB Hard Drive
- DVD/RW

The Delta Elite is a compact, durable, small form factor PC offering improved 'Storm Coat' paint durability and scratch resistance. With a minimum 8 year design life, fans rated for over 50,000 hours and 85% PSU efficiency, the Delta Elite will deliver outstanding performance and improved reliability for many years to come.

ZOOSTORM DELTA TOWER
DESKTOP PC

The best-selling cost effective Delta Tower from Zoostorm leads in the classroom. A work horse in the education environment it delivers consistent reliability and efficiency.

PRODUCT CODE: 7240-0198

- **Windows 10 Home**
- Intel® Core™ i7-6700 Processor
- 8GB RAM
- 1TB Hard Drive
- DVD/RW

PRODUCT CODE: 7240-0195

- **Windows 10 Home**
- Intel® Pentium® G4400 Processor
- 8GB RAM
- 1TB Hard Drive
- DVD/RW

Windows 10 Pro is a great business partner. It has all the features of Windows 10 Home, plus important business functionality for encryption, remote log-in, creating virtual machines, and more. Windows 10 offers fast start-ups, a familiar yet expanded Start menu, and great new ways to get stuff done even across multiple devices. With innovative features like an all-new browser built for online action and Cortana, the personal digital assistant.

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"Extraordinary changes are afoot"

As part of the HundrED project, 100 visions for the future of education are being collected – here, Sir Ken Robinson shares a glimpse of his...

Education is a dynamic system, not a static one. It's not an impersonal, inert engineering system, it's constantly in flux and changing. It exists in the actions and activities of people every day. So the system is living and constantly changing.

For example, new technology is tearing through education in many respects and subverting many of the ways in which people are connecting with each other.

Within the system there are people who are operating certain sorts of traditional models, and others, even in very traditional systems, who are innovating and doing creative things. You can find examples of tremendous innovation within the current systems as they are.

So it's hard to generalise, but there are some features of most mass systems of public education, which I find troublesome in terms of what we ought to be providing our kids with now.

One is that they're typically based on a very narrow view of intelligence. It's a view of academic ability in particular, which is too often contrasted with vocational learning: it's more about theoretical than applied work. There is also an emphasis on the so-called 'STEM' disciplines, often to the exclusion of art and humanities.

There is an overemphasis on testing and on compliance, as well as on linearity - the view that you can anticipate not only the lives that our kids might lead when they leave school, but the lives they should lead. We express this in the way the curriculum becomes narrowed to what are thought to be more utilitarian subjects.

Somewhere in there too there is a tacit conception of supply and demand. That's what you see in the standards: 'We need more engineers, let's make that the heart of education. We need more mathematicians, let's have much more math in schools, we need more scientists, let's have more science. We need fewer ballet dancers, let's not have dance in schools.' It is as if education is some sort of pipeline for manufactured products.

Skills

It is important to define what education is for. For me, the purpose of education is to help young people understand the world around them and engage in the world within them. A lot of the education system is focused on the external world, but all children have their own talents and abilities, sense of possibilities, biographies, anxieties, hopes and aspirations. Among the reasons why kids get disengaged from school is that schools don't speak well enough to their inner world, and so they don't feel that school is anything to do with them, or they have been made to feel stupid by it. Or they find it pointless or just boring.

On that basis there are four big purposes of education: economic, social, cultural and personal. But rather than defining education through a group of subjects, I think it is better to think of the competencies people need to make their way in the world now and to engage with the world the way it seems to be evolving. I would include things like curiosity, because in the end education depends on an appetite to learn. If that gets stultified then learning starts to slow down and eventually become frustrating

Creativity is an essential set of skills and capabilities. It is the capability to have and develop new ideas that are original and of value and to know how that process works. This is a fundamental skill in every field of human endeavour from the arts and the sciences to technology, mathematics and business. It's really what sets us apart from the rest of life on earth; our capacity to come up with fresh ideas and to make them come into being, to create things in the practical world as well as conceptually.

Other critical skills are communication, which is being able to put our ideas together and explain them properly to people in a variety of forms. And collaboration. We live in a social world, we need to work with other people. And if you have an education system that's atomised, where people work in groups, not as groups, which is rooted in competition, then it betrays the most fundamental dilemma for which most communities actually flourish - when people work together for some common goal.

The next 100 years

Part of my long time argument is that we're living in times of revolution and it's not going to slow down. We exist in times that are driven by rapid evolution of digital technology, and the changes we have seen in the past fifty years will be nothing compared to what lies ahead in the next fifty. I mean, extraordinary changes are afoot in the way these technologies affect how we live, the work we do, where we do it, who does it.

We are living through times with immense population growth - the population of the world doubled in the last thirty years. It's seven and a half billion now and heading towards nine billion in the middle of the century. We are putting a massive strain on the Earth's natural resources and we have to really be able to engage in a profound process of innovation, on how we feed ourselves, the

100 VISIONS

HundrED is a Helsinki-based, global, non-profit project to determine how the next 100 years of education should look. As 100 education experiments begin in schools across Finland and a further 100 global innovations are selected from teachers across the world, 100 visions are being collected from educators, experts and policy-makers – including Sir Ken Robinson – to help determine how education should change to ensure it meets the needs of an ever more globalised world.

To find out more about HundrED, to read Sir Ken Robinson's vision in full, and to explore what other contributors have been saying, visit www.hundred.fi.

ABOUT

Sir Ken Robinson is an international educator, speaker and author, who will be appearing at the Bett Show in January 2017.

fuels that we use, how we house ourselves. More than half the world will be in cities, in enormous mega cities.

These are times with immense change, and I think why Finland has become an exemplary education system for many people around the world is because, over the past 40 years, it has evolved into one that is highly personalised, highly collaborative and one in which a lot of professional discretion is placed properly in the hands of teachers and of head teachers.

But even Finland can't afford to sit still, because the world is changing so quickly and although the principles of its system are fundamental and sound, the way they are applied has to continue to evolve.

Role of the teacher

At the heart of education is the relationship between teachers and learners - that's what it's about. Everything else should be focused on making that the best relationship possible.

The problem is that over time, all kinds of things have gotten in the way of it - testing regimes, league tables, unions' bargaining rights, building codes, professional identities, the concerns of various pressure groups, the ideology of various political parties. It's very easy for people to spend all day discussing education without mentioning the students at all. But all of this is a complete waste of everybody's time if we forget that our role is to help students to learn. Therefore, the question is: what should they learn and how do we best do that?

All the great education systems and schools know that. It's why they invest so heavily on the selection of teachers, why they insist on getting people who don't just have good degrees, or have them at all. They want people who know their material, but they also know that teaching depends upon a whole set of pedagogical skills and a love of the process. It's more than the transmission of direct content. It's about having a set of skills focused on facilitating learning.

TOP OF THE CLASS

The winners of this year's Technology & Innovation Awards, in association with LEGO ® Education, are a truly exceptional selection!

Theresa Russell, head of KS3 computing, Morecambe Community High School

Theresa Russell (pictured, second from the right) was nominated for this award by student Megan Williams, who described her as "an exemplary teacher, and one that is loved by all her students, and her staff too." Ms Russell is particularly keen to raise interest and engagement in STEM subjects and computing amongst her female students, running a wide range of out of school clubs and encouraging learners to enter national competitions. And, Megan adds, that's not all: "Ms Russell isn't afraid to go even further out of her way to personally help her students achieve their goals, and that is just a part of what makes her so admirable. While I'm interested in engineering, a career in medicine has always been what I've wanted, and Ms Russell spent six hours with me one Saturday at a course at Lancaster University, so that I could learn about the different routes into medicine. Without her, I wouldn't know where to begin, and I know that the lessons that Ms Russell has taught me both inside and outside of class will stay with me for a long time."

"I believe as a teacher that our students need our belief in them and their potential," says Ms Russell. "I am passionate about trying to encourage more girls into computing. I believe that working with female role models and seeing what is out there is the best motivator for students; showing them it's not just all about code!

I have run girls' groups after school since 2012 – I love teaching and I have been really blessed to have worked with great teams of young people who have followed my lead and entered a multitude of different competitions. We have had elements of success and won some trophies, one of our most prized being for Best Project at First LEGO League – made from actual LEGO (this looks great in our trophy cabinet with the shiny PE ones!)

I have also been lucky enough to work with some inspirational female mentors from industry such as Silvia Spiva and Heidi Rhodes, both from Cisco based in San Jose. I was fortunate enough to take five girls to meet them a few years ago on a trip funded by Cisco VPs. We have been supported locally too, by EDF Power Station in Heysham – we had a great day touring the plant and meeting female STEM staff. Running the clubs takes effort, but what the girls get out of it makes it all worthwhile."

Ms Russell will receive a LEGO® MINDSTORMS® Education EV3 FLL® Starter Set, worth £399.99

HUE HD Pro classroom camera and visualiser (£44.95 + VAT)

huehd.com/pro

They say:

Designed specifically for teachers, this versatile, plug n' play multipurpose classroom camera is affordable, portable and good looking too. The flexible neck allows the camera to be positioned at any angle. The Pro camera also comes with HUE Intuition, easy to use camera management software. In terms of the engagement factor, using a HUE HD Pro camera is ideal for getting together, getting focused and getting down to the business of learning.

Our judges say:

"I was very impressed with the Hue camera, for three reasons: first, it has great functionality. It combines the functions of a visualiser, a camera and a webcam, and because it is physically flexible and light I can see it being used extensively by children to demonstrate their work to the class. Secondly, it worked as soon as I'd installed the software, with no faffing about with settings or anything like that, and it was very intuitive to use. And thirdly, it was about half the price I was expecting it to be!"

T. Freedman

"It has been proven that visualisers have contributed positively to teaching and learning; this technology has long term life in the classroom."

A. Benjeddi

"It's the versatility that is so impressive; this is an affordable little device, the use of which can be driven by pedagogy. It's lovely and easy to use as well."

R. Jones

teach SECONDARY TECHNOLOGY + INNOVATION AWARDS WINNER Best School

Simon de Senlis Primary, Northampton

Simon de Senlis Primary School, in Northampton, was nominated by Caroline Pritchard-Law, of Zioxi Ltd, which plans, designs and manufactures ingenious and inventive furniture for education spaces. "This primary is without doubt one of the most innovative schools we work with," she says. "Their use of technology is exemplary and they have a purpose designed area – the sandpit – for students to learn and play with technology. The school also hosts numerous events to help others in the area learn from and share their experiences of working with technology as part of an integrated digital strategy. They are passionate about learning and innovation and this really shines through in both the school and the students. We are very lucky to be a small part of their journey."

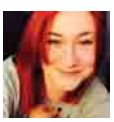
"We are delighted that our commitment to innovation and creativity has been recognised through this award," says head teacher Tom Rees. "At Simon de Senlis, we believe in equipping our children with the rounded set of knowledge, skills and habits to go on and lead successful lives in the future and technology is a key teaching tool for us to do this.

Within our school, teachers are encouraged to think how carefully selected tools and technology can play their part in deepening learning and making the curriculum richer; children are challenged to think about which technologies might help their learning and different times and, importantly, when it's right to put the devices down."

A LEGO® MINDSTORMS® Education EV3 Getting Started Set for 16 pupils, worth £2,549.99, is on its way to Simon de Senlis school

MEET THE JUDGES

Abderrahmane Benjeddi has taught ICT for over 20 years, introducting various technologies at all levels and providing training to both staff and students. He is the founder of *RiskITWeek.com* that promotes creativity and build confidence in schools.
@benjeddi



Rachel Jones is a Google and Microsoft certified teacher, interested in innovation and creativity in the classroom. She curated *Don't Change the Light Bulbs*, and wrote *Teacher Geek*, both published by Crown House.
@rlj1981

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

Terry Freedman is an independent educational ICT and computing consultant, who regularly contributes to Teach Secondary, and publishes the ICT & Computing in Education website at ctineducation.org and the Digital Education ezine at ictineducation.org/newsletter.
@terryfreedman

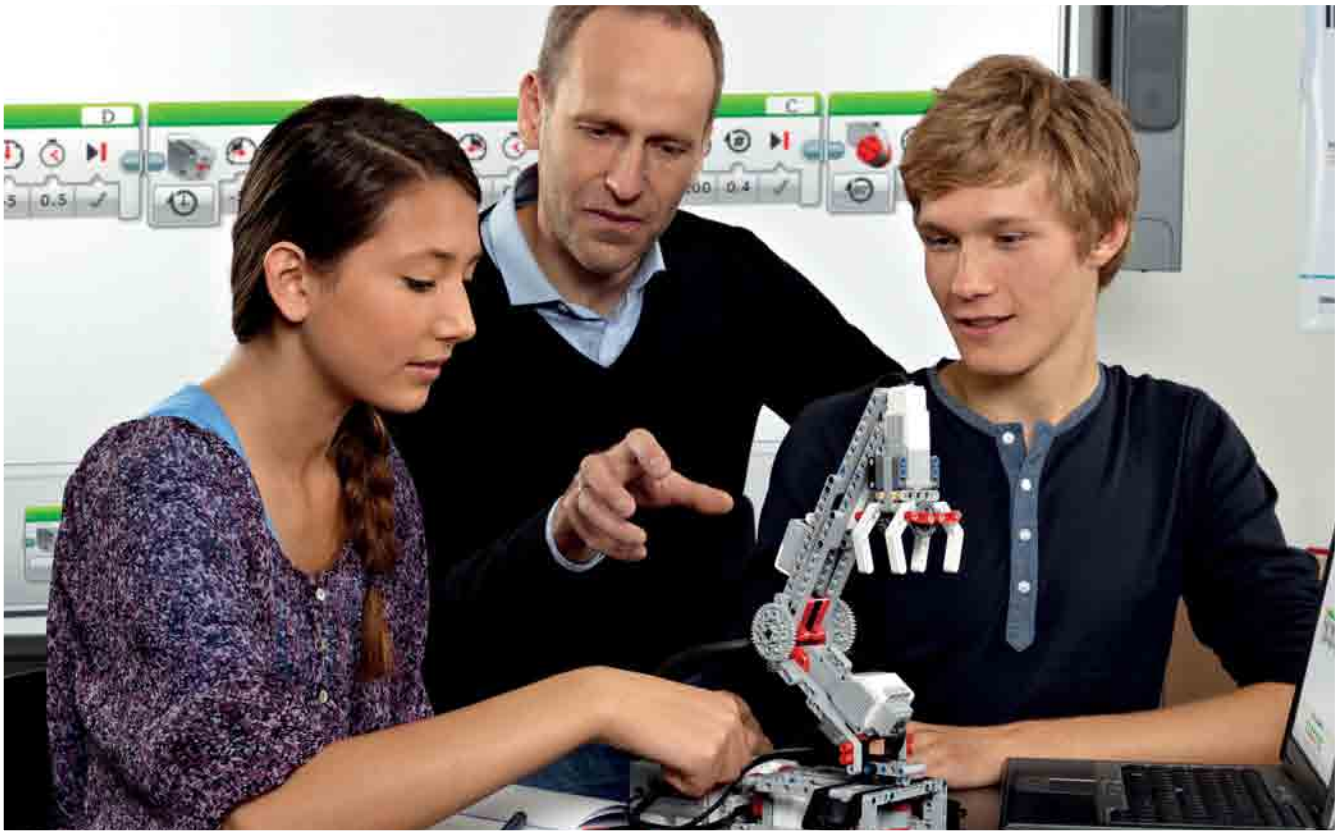
teach SECONDARY TECHNOLOGICAL INNOVATION OF THE YEAR RUNNERS UP

GCSE Achieve, by bksb
GCSE Achieve is a proven, easy-to-use and cost effective eLearning revision package for GCSE English and maths. Its unique process is designed around an individualised approach to learning, in which the assessments identify specific skill gaps for each student, and a learning plan is automatically generated which highlights those gaps and provides the online resources required to help fill them.
"bksb is immense. It's invaluable."
(Jacqui Thompson, Fountain House PRU)

Zzish teacher dashboards
This is breakthrough technology that turns simple apps into valuable classroom tools through the introduction of real-time teacher dashboards. It allows teachers to get instant insight into class and student strengths, weaknesses and learning gaps in the classroom in real-time, so that they can personalise their teaching and deliver student-centred learning. Any e-learning app can plug into the Zzish teacher dashboards including Quizalize, Zzish's own showcase app, that turns dull assessments into fun whole class quiz games.

C-Pen Reader Pen, by Scanning Pens Ltd
The C-Pen Reader is a totally portable, pocket-sized device that reads text out aloud with an English, human-like digital voice. It's a major technological advancement for anyone learning English, and a life-saver for those who suffer from reading difficulties such as dyslexia. Simply pass the nib across a word and it instantly displays the definition and reads it aloud; it is also a scanner for capturing lines of text and uploading to a PC or Mac, making it ideal for students, teachers and professionals to capture essential information.

NetSupport School, by NetSupport
Classroom management solution NetSupport School provides teachers with dedicated assessment, monitoring, collaboration and control features to help maintain students' focus in technology-led teaching and learning. The increasing use of technology in classrooms brings with it a host of challenges, enhanced learning opportunities and the responsibility to keep students safe; NetSupport School ensures teachers can achieve the best outcomes for their students.



LEGO MINDSTORMS education EV3

Building the future

Andy Snape discusses how hands-on learning can be used across the curriculum to engage students' creativity and help to develop truly innovative ideas in the classroom

It's no secret that using real-world examples can really enhance the learning process, engaging students with content, while simultaneously inspiring them to look past the topics of the curriculum and see how subjects work in the world around them. But how can we take this a step further? How can we give students the chance to apply these concepts in the classroom, experimenting with their own ideas?

Education, and the world surrounding it, is ever-changing. As teachers, it's important for us to adapt our practices to reflect the evolution of industry, technology, science and society as a whole. While developing an understanding of what's going on in the world and the underlying theory is a crucial foundation to learning, we now have the resources in schools that allow students to actually create their own solutions, and we should make use of this potential.

This is where hands-on, physical experimentation comes in. We use LEGO Education resources extensively throughout Newcastle Under-Lyme College, and we often have other local primary and secondary schools visiting to use the resources for their own lessons.

Model examples

As part of this, we use LEGO MINDSTORMS Education EV3 to teach engineering, mathematics and computing, as well as using it for an extracurricular robotics club. Using the central programmable 'Intelligent Brick' students can design and build robotic solutions to different scenarios and problems. This could be anything from a sorting system that organises items into distinct categories based on colour, or a prototype space rover that avoids obstacles and performs basic tasks remotely. Learners can build models containing

different sensors and motors, and then program them to carry out different tasks, with the results and data being collected by the software.

For example, during a science lesson considering speed, distance and time, students can be challenged to program a robot which will move a certain distance, travelling at different speeds each time. Following this, they can examine the data and work out how long it takes the robot to travel the set distance at each speed. The topic can then be explored further, asking questions such as: "At which speed is the robot moving if it takes two minutes to travel 10 metres?" This sort of activity engages the mathematical, technological and scientific understanding of students in a tangible, engaging way.

Thinking outside the box

Kinaesthetic learning has been proven to produce learning outcomes that are more easily retained in long-term memory. The power of this type of learning is based on its open-ended possibilities, allowing students to discover their potential and develop important skills, such as confidence, teamwork, curiosity and problem-solving, all of which strengthen learning and boost pupils' interest in subjects. This is especially helpful in programming, as computational thinking can be difficult to grasp, or found boring due to following set instructions for a specific outcome. EV3 provides the opportunity for students to design their own path on a simple, easy-to-understand platform, using the various sensors and mechanical elements to really make the project their own.

Get together, achieve more!

Another crucial element in both engagement and raising attainment is to encourage collaboration and group work. Not only does this increase the potential number of solutions that could be created for one problem, but also simulates the composition of an innovative working environment or research think-tank. Each student will have their own skillset to bring to the table, and the element of teamwork helps to ensure that every student is able to see a tangible outcome that they have contributed to, whether they helped with concept, construction or coding.

Traditionally, practical work could only be recorded as method and result notes in an exercise book, but technology has hugely diversified how students can capture and share their work. Once a student or group has created a working solution, they can take photographs or record videos of their project using tablets, smartphones and other devices. EV3 includes software for students to create a digital portfolio of their work, allowing them to annotate and share their creations with teachers and other students. Different prototypes and versions can be captured in one place, showing progression and giving students the confidence that they are achieving their goals.

The essential skills gained from learning through an explorative and creative education provide students with a fundamental understanding of how to absorb and process information and identify conclusions. When working in teams, this also develops skills including communication, analysis, problem-solving and decision making, leadership and flexibility, all of which help to create a truly effective working environment.

Creator, innovator, teacher

LEGO Education resources are hugely versatile. Not only are there set curriculum aligned activities and open ended challenges, but teachers can even create their own tasks to implement in the classroom. Whether it's simply using the resources to reinforce cross-curricular learning, or generating entirely new projects in the EV3 content editor, this flexibility means that teachers can tailor lessons to fit the needs of their students.

Because of this, the kits can be used time and time again, diving further into topics to develop a deeper understanding and expertise. Whether students need step by step instructions or if they can work around the problem in a more flexible way, they are able to learn at their own pace, developing mastery in a creative and engaging way.

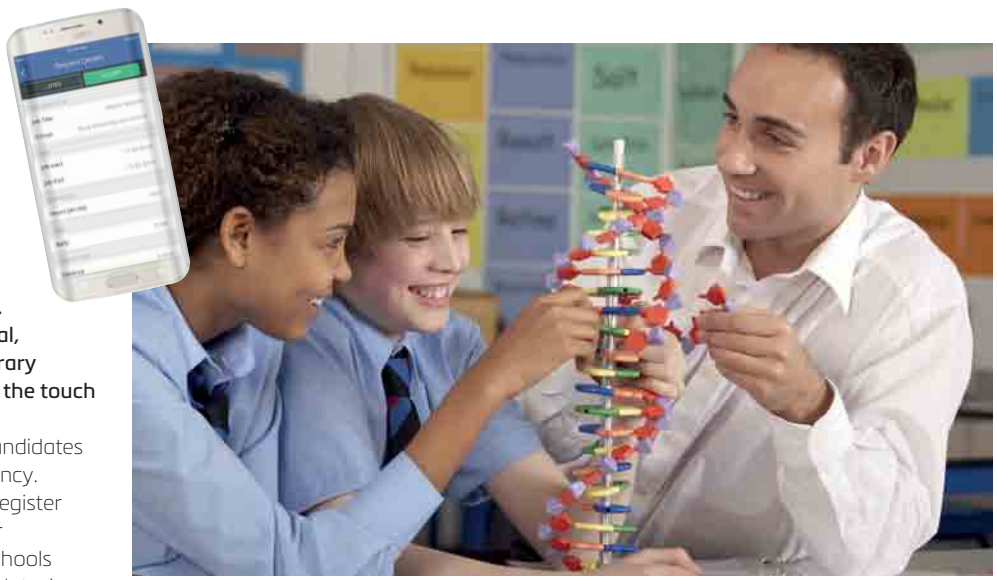
Our students, staff and local community absolutely love the LEGO Education resources. They enrich the curriculum that we deliver and it's something a bit different, fun and innovative. It's important to bring as much creativity into teaching as possible, in order to engage students and develop a set of skills that they can use across various subjects, and this is where LEGO Education really excels.

ABOUT THE AUTHOR

Andy Snape is a mathematics lecturer and LEGO Education Innovation Studio Manager at Newcastle Under-Lyme College.

SUPPLY AND DEMAND

By connecting local schools to local teachers and cutting out the middle man, Teachers Register offers a genuine agency alternative



Teachers Register, a pioneer in innovative recruitment solutions, has announced the launch of its new, free mobile app. The app aims to make supply teaching more straightforward by connecting supply teachers and schools directly, removing the need for a traditional recruitment agency. Teachers Register will supply local, fully vetted and screened temporary teaching staff to local schools at the touch of a button.

The service, which is free for candidates to use, offers complete transparency. Candidates sign up to Teachers Register and create a profile detailing their qualifications and preferences. Schools and colleges can then view candidates' information and contact them directly.

In an economy where efficiencies and budget control are key, Teachers Register provides an affordable solution to educational institutions, allowing them to focus their resources elsewhere.

What are the advantages?

Teachers Register eliminates the painstaking process of traditional staffing recruitment by offering a service which ensures transparency, efficiency and value for money:

Complete transparency

Hire directly from a pool of pre-vetted and safeguarded candidates without the additional cost that using an agency would incur.

Total convenience

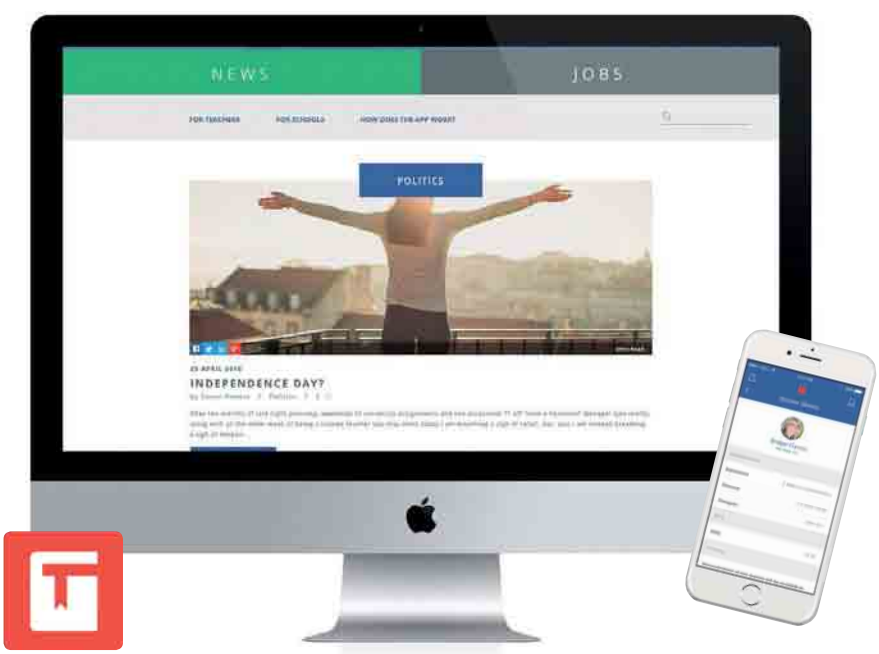
Directly hiring your next teacher is just a few taps away.

Forward planning

Understand your school budget, and redirect the unnecessary agency spend on providing a better education for your pupils.

Reduced workload

Automate the most tedious and tiresome part of your day with thousands of fully vetted and screened teachers just a few clicks away. No more harassing calls from agencies - contact teachers directly and eliminate the middleman.



MORE INFO

In addition to the app, which is available on IOS and Android devices, Teachers Register is available online at www.teachersregister.com

CLASSROOM INSPIRATION

Fresh ideas to take teaching and learning to the next level

THE NETWORK

93 percent of 16-24 year olds have at least one social media profile, and the popularity of social platforms continues to increase. With so many young learners using platforms such as Facebook and Twitter daily, it seems obvious to incorporate these into education. There are many ways to integrate social media into a teaching strategy; here, Zena Taha-Bjorgen shares her top tips for using social media to aid teaching and learning:

1 Create virtual groups – setting up Facebook groups for subjects, and even specific modules, and inviting students to join, provides a platform that can be used for communication and collaboration outside the classroom. Making the groups private creates a safe space for users to add links, images or videos, as well as upload documents.

2 Group messaging – teachers and students can reach each other via instant messenger apps; a great tool for reminders and asking/answering questions outside of the classroom.

3 Blogging and vlogging – writing blogs or posting video blogs allows students to develop their own thinking around a topic, opening it up for discussion with classmates and students further afield.

4 Social media as a resource – using channels such as TEDEd or YouTube, students can continuously learn according to their own timetables.

5 Social media for documentation and sharing – social media platforms lend themselves to informal conversation, creating a space where individuals feel more able to share opinions and thoughts without the pressure of having to put their hands up in class. Use social media to encourage your students to voice their opinions; all comments are stored onto the account, allowing both teachers and students to refer back.

6 Social media to learn about and practice netiquette (or internet etiquette) – interacting with people online is part of daily life, especially in the workplace. Meetings are now held virtually through platforms such as Google Hangouts and Skype. Teaching students how to conduct themselves online, safely, is a valuable skill for the future.

7 Social bookmarking – Diigo, for example, is a great tool for social bookmarking, as it creates a private or public virtual library of online resources and provides an online discussion piece for the learners to work on after class.

8 Social media for brainstorming and finding inspiration – students can use platforms such as Pinterest to create a classroom board that allows other students to add to it.

9 Social media for critical thinking and research – exploring news that spreads quickly on social media sites can be an excellent classroom analysis and debate activity to prove the accuracy and/or effect of this news on the society.

Zena Taha-Bjorgen is head of IT for global society at Pamoja Education.

58%

of pupils' learning time is expected to involve technology by 2017

Source: BESA

CUNNING DEVICES

Why would 'geek teachers' encourage the use of digital devices in lessons? Well, perhaps because bad mouthing and insults are a behaviour issue, not a technology one. Because students need to learn about good protocols for using devices in school and in the wider world (they need to learn that harmful words exist in the real world too, and have real consequences). Because we never banned exercise books and pens when students tore out pages and sent notes to one another in class. Because they need to know that there is more power in their hands than simply Google and Flappy Birds. But mostly becuase the opportunities for learning are huge.

Head teachers – please embrace digital technology. Don't blindly ban devices without considering the positives. Work with your digital advocates to create policies that will work, and encourage the responsible and proactive use of new technologies.

Extract taken from Teacher Geek, by Rachel Jones (Crown House) ©Rachel Jones 2015

FRESH AMBITION

Rhyl High School's new buildings place technology at the heart of modern learning, says head teacher Claire Armitstead

A rebuild project on the scale Rhyl High School has just undertaken brings a number of unique pressures and anxieties. As a headteacher rather than a builder, you tend not to expect many of these. When we ran our update meetings ahead of the £25 million redevelopment, I would be asked questions such as "What's your vision for toileting?" Frankly, I've never had a vision for toilets, I just wanted my new school to stand up and provide the best possible learning environment for our students.

Developing a new school building is a once in a generation opportunity, which brings with it a huge level of accountability to make it work for the people who will be part of it every day. When you walk inside with them for the first time, however, and you see the scale of the achievement through their eyes, it makes you realise that all of the anxiety has been worth it.

With our new facilities, we now have a system that allows everyone equal access to technology across the school. We made sure that we have a 'home base' system: eight classrooms centred on a social space where students can use the school's laptops to access our secure Wi-Fi system. This hub-style approach means that we're truly starting to see technology becoming a central part of life at Rhyl High School.

Crucially, this doesn't mean gimmicky new technology is important, but rather that there is parity of access for all, independent of their background. Before we moved, our students had limited access due to the funding restrictions of our school. The new building has given them an equality of access they have never previously had. With this, it is also possible to build ambition.

Despite all the bells and whistles, it's not the technology that really engages our pupils in learning, it's still the teacher. When, as teachers, we acknowledge that we're the most important person in the classroom to those students, we feel a lot of responsibility – but we don't hide behind technology, we connect the children with it. That's the aim of the school's hub and spoke style design: making that access to technology and ability to share ideas and inspiration a central part of everyday life for our students.

Work in progress

The technology our new facilities offer is also positively affecting the wider school environment. Our new building management system allows the school's lighting, heating, ventilation and water supply to be centrally managed. This means our site manager can monitor the temperatures in every classroom and lighting throughout the school to make sure it's consistently at the optimum level for our students to thrive in.

When we picked up the keys to our new home, familiarisation was essential for the staff. We had to accept that we were all functioning at different levels of understanding, so we've held ongoing training programmes at three levels: a 'novice session', introducing the features to everyone; an 'intermediate session', taking staff through the interactivity of the systems; and an 'advanced session' which let the staff get really hands-on. Since we started, we haven't had a single member of staff who hasn't got on board with the new systems, regardless of their background and experience. This collective grasp of our new approach is absolutely vital to ensuring that our students fully benefit from the facilities we're now providing.

Of course, although these systems have put us in a fantastic place, we can't stand still – the technology will keep changing. We have to keep our ears to the ground and make sure we don't consider ourselves to be complete experts. We must listen to our students and have open conversations, asking them where they want to go next and how we can help them get there. This dialogue can help us to develop even more exciting areas of schools, and we've already begun to take steps in that direction.

Vocation, vocation

Our new facilities mean we can now offer a range of courses designed to give students the best development path possible in technology from conventional modern design and technology courses (like product design and graphics), to textiles, fashion and construction. The new technology department extends to a hairdressing school too, where we are working with the local college to help us deliver hair, beauty and nail technology to our students as part of our vocational offering within our purpose built facilities. The pupils taking this course receive a Level 2 BTECH qualification, which is equivalent to a GCSE.

We also use our vocational areas to engage students of all ages. Everyone learns in different ways, and this more practical approach often provides a route to success for the students that are more difficult to reach. By embracing the power of vocational education you can open the eyes of students – not just to the prospects of a particular profession, but to the routes to business and enterprise. This allows dreams to form and ambition to grow. We now have a vocational corridor with a hair and beauty room adjoined to a theory space, with interactive white boards, projectors, and laptops. There's also a construction learning room, which opens out to a fully functional construction yard. This is set up so students can learn plastering, tiling and wallpapering skills, and landscaping and joinery techniques.

Currently, these facilities are for our 14 to 16 year olds, but we are exploring how we can offer this to under 11s from local primary schools and the wider community too, as a taster. We want our Rhyl High to be a true community school and that means welcoming everyone.

Amongst all of these changes, an important factor in education that often seems to be forgotten is that we're all different, and we all learn in completely different ways. Students stuck in an environment that dictates one style of learning are never going to engage, be excited, or feel that they are achieving anything like their best. We want to open up as many routes to achievement as possible, because our role isn't to be an exam factory. Our role is to get our students to love learning. When they do, they will have the confidence to try something new, challenge their own abilities and gain the resilience we all need for adult life. We want all our children to find their own pathway to being successful and brave adults that make a contribution to society.

"We have to keep our ears to the ground and make sure we don't consider ourselves to be complete experts"

ABOUT THE AUTHOR

Claire Armitstead is headteacher at Rhyl High School, which educates over 900 students, aged 11-16, each year.

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JOIN THE REVOLUTION

Transform your teaching with Avocor's VTF touch screens – the next generation of interactive classroom technology

Take technology in the classroom to the next level with Avocor screens (previously known as Vividtouch). Professionally built, with genuinely revolutionary features, these powerful and intuitive touch screens are designed to thrive within dynamic learning environments.

Avocor interactive touch screens deliver teacher and student-centric technology and usability. End users in schools have been placed at the forefront of product development, with the objective of bringing familiar, easy to use and secure applications to the classroom.

With unique and first-to-market concepts, the new VTF series makes a break from the market trend of embedding Android; favouring instead a Microsoft Windows 10 operating system; the touch screens also come complete with InGlass™ touch technology, making them the first in the education sector to boast this unrivalled technology.

Perfect 10

As familiarity is key for teachers and students, the Avocor VTF touch screens are all built with a Windows 10 operating system (fast becoming the system of choice in schools), with 32 Gb storage – giving you and your students access to a world of well-loved and new educational apps by means of a safe and growing Windows App Store. There are thousands to choose from, from early learning games

avocor™

to study aids and event apps that will help you manage the classroom, inspire lessons, complement the curriculum and encourage engagement. With more and more apps becoming available each day, you can deliver fresh and exciting lessons for varying learning styles and subject areas.

As well as the above, a Windows 10 operating system means that all Avocor VTF screens come complete with standard Windows applications, such as OneNote® and Sway, as well as mobile versions of PowerPoint®, Excel® and Word. This first-to-market concept allows you to walk up to the screen and access OneNote® and Office 365™ without the need for a laptop, removing the need to carry devices around and allowing teachers to login and immediately begin sharing previously prepared content.

Avocor screens are the first in the education sector to feature InGlass™ technology, giving you an experience which is responsive, smooth, intelligent and accurate. A true tablet-like experience, InGlass™ is up to five times more responsive than other solutions, meaning there will be no more waiting for the ink to catch up! You'll also feel the benefits of precise and accurate annotations – no matter how small. InGlass™ technology has intelligent touch; it knows when you're using your finger, pen, eraser or palm, bringing a whole new level of functionality to your experience.

Simply brilliant

With ease of use in mind, the Avocor screens include several extremely useful control keys on the front, as well as a multitude of connections ports so you can plug in and get going. For example, unlike other screens, Freeze Frame and Blank Out keys are accessible on the front of the Avocor screen, so you can take control of what is being viewed at the press of a button. USB and HDMI ports, also at the front, mean that connecting devices and bringing up content has never been easier. Whether you want to connect your laptop, USB stick, visualiser or plug in a memory stick to start using the Win10 player, you can do it all fuss-free.

Whiteboarding software is a highly used application, so Avocor has designed an optimised Windows 10 whiteboarding software package exclusively for Avocor screens. Avocor Note allows you to use simple whiteboard software, optimised for Windows 10 and InGlass™ technology – meaning you can write, save and distribute your content with ease.

MORE INFO

To find out more, call **01276 804 654**, visit **www.avocor.com** or email **info@avocor.co.uk**

A touch OF CLASS

Toni Barnett runs through the top ten questions you need to ask before making a decision on touchscreen technology

1 What's the long term value?

The product that seems the best value initially may actually work out more expensive in the long run, so when deciding on a touchscreen it's important to factor in display quality, and choose a brand with general display experience. Look into the the brand's involvement in product design, and its ability to offer a dedicated product for education. Your chosen AV integrator will be able to work to your specified budget and suggest the most suitable touchscreen in terms of initial investment and subsequent energy and maintenance costs.

2 Does size matter?

Many of us instantly think bigger is better, but the size of touchscreen to choose will depend on various considerations. Cost is a key factor, of course, and dimensions are not always relative to price. Clarity tends to be of a much better quality on a touchscreen in comparison with an interactive board, so it is often possible to install something smaller, whilst still enabling everyone in the classroom to read the screen clearly. Adjustable brightness and glare reduction as standard on many touchscreens also allow for a smaller screen to be used without loss of clarity for students at the back of the room - although classroom size, layout and seating arrangements also need to be taken into consideration.

3 Will you need extras?

Depending on the size of the classroom and primary usage of the touchscreen a soundbar may be necessary to deliver high-quality sound. Also, you should consider whether the screen will be used simply at the front of the classroom to deliver presentations – or if student handheld devices will be required to enable interactive activities, note taking and assessment. Connectivity is a crucial issue, too; decide on the inputs you need today as well as for future use.

4 Can it be developed?

Does the OS you are looking at give you the ability to add to it and upgrade? Ideally, you need a scalable system that can grow with the ever changing needs of your classroom.

5 Where is it going?

The surface that you plan to have the touchscreen attached onto needs to be checked prior to installation. If you want a wall mounted screen, you must

ensure that the wall is strong enough to hold its weight. Single skin plasterboard won't safely support a touchscreen, so if that's what you are looking at, a floor-to-wall mount or pattressing may be needed. Installation companies should offer a free site survey to assess suitability. Before the installation begins the teaching position needs to be decided (ideally within three metres of the screen), so if cabling is required trailing can be avoided. Another consideration is the direction of sunlight into the room – if it shines directly onto the screen this will affect the brightness of the display and may even interfere with the screen's interactivity. If all of these issues are taken into consideration before installation, then it should be a smooth and safe process.

6 Who will use it?

As is the case with any procurement process, before investing in touchscreen technology it's important to determine who the end user will be. The screen needs to be accessible and easy to understand and use for both teachers and pupils, including those with special educational needs. If the installation is for a special needs school, for example, then a high-low lift might be appropriate, allowing children who are in wheelchairs or lying on the floor to be able to touch and interact with the screen; a high-low lift is also ideal in many other circumstances where both teachers and pupils will be using the screen. It's even possible to have a high-low mobile trolley, which is perfect for open learning spaces or in a small school with limited funds where the screen will need to be shared between classrooms and various learning groups. Pupil and teacher safety is also a consideration; the screen needs to have low blue light filters and be flicker free for comfortable viewing, and there should be the option of lockable screens for teacher use only.

7 Are you covered?

Consider not just the length of any warranty package, but also service levels – make sure you check carefully for parts exclusions (many agreements exclude the panel, for example, which can actually account for as much as 80% of the cost), and choose a brand that will still be in business years down the line, and can insure future compatibility.

8 What's the software?

A key consideration is whether software you are already using can be incorporated into your new hardware, or if you can move to a platform that allows conversion of your existing files. If you are looking at a new system with a complete change of software, will it be easy to learn for both teaching staff and students? You also need to look at what third party software is included, and what the licensing requirements – and any restrictions – are.

9 Who will supply and install it?

When choosing an AV reseller/installer it's important not simply to look for the cheapest upfront costs. Quality resellers offer a service of support and advice as well as a professional install. Make sure that they offer the appropriate maintenance and after care package; although touchscreens tend to be less problematic than projectors and interactive whiteboards there will still be a certain degree of servicing required. Check how long the warranty will be for repairs, and who will be responsible for the maintenance of the equipment and any issues that arise. Will the installer also show staff how to use the equipment and go through some simple troubleshooting after it is installed? Ensure that you know whom to contact if there is a problem and that any problems will be resolved quickly to avoid any disruption to learning.

10 How will you get the most out of it?

Before deciding on a touchscreen it's important to consider what its key function will be. If it's primarily for showing videos or simple presentations then a smaller display size may be practical, whereas if the core purpose is interactivity and collaboration then a larger screen may be more appropriate. It's also worth investigating different brands to see which specialise in offering dedicated education products. Don't end up accidentally buying an overpriced and oversized television!

ABOUT THE AUTHOR

Toni Barnett is managing director at CDEC Limited.

Q&A INTERACTIVE MULTI-TOUCH SOLUTIONS

Chris Poulson explains why Promultis screens are a superior solution

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T&I Why should schools add the next generation of touchscreen /interactive technology to their classrooms?

CP Interactive whiteboards have been a common mainstay in classrooms for 10 years, but are becoming increasingly expensive to run and out of date. The ability to present, interact and collaborate with PC based content has improved teaching and learning. Unfortunately projector and whiteboards prove costly, using large amounts of power and requiring regular lamp replacements and maintenance. Next generation LED multi-touch products are a low cost, green and safe whiteboard replacement. Reduced cost of ownership, multi-touch interactivity and in-built android PC brings a new dimension of interactive presentation to the classroom.

Who is Promultis and what differentiates Promultis products from other solutions ?

Promultis built its first multi-touch table eight years ago when Edinburgh University set us the task of creating a collaborative multi-user surface, which was the first of its kind in the UK. Ever since Promultis has been a pioneer in providing high quality, reliable interactive solutions. We are a solution provider, visiting and communicating extensively with our customers to ensure they receive a perfect solution which is tailored exactly to their specific remit. We supply anything from a wall mounted touchscreen on an electric height adjustable mount to a touch and gesture controlled 265" interactive video wall.

How is Promultis impacting schools?

Teachers and students are benefiting from the diverse range of functionality that these screens provide, impacting daily interaction and engagement with teaching materials. Next generation interactive screens provide ten times the functionality and features of standard interactive whiteboards, offering new and exciting ways to learn and collaborate. From a cost perspective the life time cost of Promultis screens is half that of existing interactive whiteboards.

What level of customer service can your customers expect?

Promultis is proud to offer the highest levels of customer service, with excellent statisfaction rates, and high levels of confidence in the Promultis product range. All products are supplied with a three year onsite replace or repair policy. We work exclusively with Technology Supplies, leading suppliers in the Design and Technology education market, to supply our products, deliver no obligation advice and site surveys. Full demonstrations, training and on-going technical support are available for all products within the portfolio.

Q&A EDTECH ADVICE

From an initial site survey to ongoing training, YPO is ready to be your partner for interactive technology, says business manager David Clinton

VISIT: WWW.YPO.CO.UK CALL: 01924 834 896 EMAIL: CONSUMERELECTRONICS@YPO.CO.UK

T&I Why should schools be speaking to YPO about interactive technology?
DC YPO is one of the UK's largest suppliers of educational resources and we have been supplying quality products at competitive prices to educational customers for over 40 years. We offer impartial advice on a wide range of interactive brands such as SMART, Promethean, Clevertouch and Prowise for interactive panels through to Aver and Elmo for visualisers. As interactive technology products are fast moving give YPO a call to discuss the latest range available and the most up to date pricing.

How extensive is your range – and can you put together bespoke packages for individual schools?
We offer a wide range of interactive technology products and these are not limited to the products that are shown in our suite of catalogues or on our website, so if you can't see what you require please contact us. YPO can assist you in your sourcing requirements with our range of compliant contracts and trusted suppliers; which can take the stress out of making the correct choice and mean there is no need for you to obtain three quotes. We can work with you and your contractors on any kind of project, large or small, from supply only to full turnkey solutions.

Would you describe what you offer as an 'all through' service?
Yes, YPO will assist you right from initiating a site survey if required and deciding on the correct product for your requirements through to installation and training. We can also arrange for a demonstration of the technologies if you need to see the technology in action. You can be assured that YPO will be there at every step of the process to ensure that you are fully satisfied with your purchase. If you have any questions throughout the life of the product you can be certain that YPO will be there to help.

Does that include training for teachers, to help them get the most out of the new technology?
Of course, we want to ensure that when a school or college has purchased through YPO, their staff receive full training on the equipment to maximise the features and benefits of the technology. At YPO we pride ourselves on our customer service and we want to ensure that our customers feel totally at ease with using the equipment. We are always on hand to provide guidance and assistance.

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Q&A INTERACTIVE TECHNOLOGY

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

VISIT: WWW.IIYAMA4EDU.COM **CALL:** 07891864665 **EMAIL:** S.KILROY@IIYAMA.COM

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

SK: We've all seen education technology develop tremendously over the last ten years, with the classroom environment now becoming a fully digital workspace for both teachers and students. The main focal point of the classroom remains with the teachers making their lesson plan and activities fully visible to the class via some kind of display be it a projector or interactive LCD Screen. The ability to interact with this content is key and even more important is to have interactive displays that represent your annotations, notes, activities and ideas flawlessly and reliably.

iiyama Interactive LFD's (Large Format Displays) guarantee the most impressive and vibrant display with unparalleled speed and accuracy for multiple touch points ensuring your lessons will always be inspiring young minds.

One critical factor is that iiyama doesn't sell any software. As strange as it might seem, this is actually a benefit to the educational sector. Most of the time schools become enmeshed in complex software, which is a fairly expensive investment, and struggle to use it within a class room. iiyama takes the stance of teaching people to use the interactive and presentation tools available within the Microsoft Office environment, which are easy to use, expand beyond the class room environment into the workplace and best of all... are free.

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

As a manufacturer of displays for over 26 years, our heritage really lies within the desktop monitor sector. However, iiyama has always sold interactive displays and has expanded to include a superb range of large format interactive solutions for the education environment ranging from 42"-70".

Any product developed by iiyama has to meet our standards of performance and reliability. Any user of iiyama products will

testify to the quality, clarity, brightness and depth of colour on our displays. Furthermore, the fact that iiyama touch capable products are the quickest, most responsive and accurate on the market ensures that users are happy with their investment. For iiyama, it is about demystifying the oversold educational software solutions, instead focusing on delivering content quickly and easily using software teachers are already familiar with. iiyama's part in the solution is to provide stable and high quality hardware. Lastly, the iiyama screens do come with a very basic Android operating system, offering a very basic annotation and media play back functionality to enable teachers to start working straight off the cuff without the need for a laptop device to be connected.

Are there any new products teachers should be getting especially excited about at the moment?

iiyama has a larger 84" Touch Screen display with a 4K resolution on the road map, which will be launching later on in 2016. There is a demand for larger screens within the education sector, and this will offer exceptional clarity and definition, as well as the usual fast and responsive interactive experience. iiyama also has developed an amazing range of premium Projective Capacitive touch screens, from 32" to 55", which offer a robust edge to edge glass design (almost like a large tablet PC), with the main selling feature that they have an IP (Ingress Protection) rating and can work in a table top mode. Once the screen is attached to an iiyama Tip and Touch stand, schools can create their own cost effective interactive table solution.

Can you advise schools about the most appropriate touchscreens for their needs?

iiyama, along with iiyama accredited AV Specialist Partners, will always listen to a school's needs and advise the best solution. However, iiyama won't force a square peg into a round hole, as it were, and will always listen to the software demands of schools. In many cases we often find teachers don't actually use the expensive software packages they have purchased to their full extent, and are generally surprised when iiyama staff demonstrate the free tools available in Microsoft Office. iiyama has a very honest approach to the classroom and will always advise schools on best practice as well as realising their technology ambitions.

What do you offer by way of after-sale support?

iiyama offers a complete onsite 5-year warranty exclusive to education, as well as telephone support and access to the UK account managers who are always happy to answer questions. All iiyama support teams are based in the UK, which means iiyama offers a comprehensive and fast response to any technical support issue. However, iiyama only uses commercial standard components designed to withstand the most demanding use to ensure maximum user satisfaction and minimum down time.

Any exciting developments in the pipeline?

As mentioned already, iiyama is developing an 84" 4K Infra Red touch screen, and a 4K 65" Projective Capacitive touch screen – with the same philosophy of simplicity, quality and user friendliness that characterises the company's entire range.

We're 100% focused on supporting UK schools with technology solutions that save money, increase efficiency and help teachers and learners to be more successful.

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GOOD THINKING

Careful consideration of your school's specific needs is key to implementing a successful ICT strategy, says RM Education's Martin Pipe

Technology is changing the world and will inevitably have a huge impact on the world our children grow up into. But as it becomes an increasingly integral part of education, so does the challenge for schools to save money, spend it wisely and use ICT more effectively.

Think about the particular challenges in your school or group of schools - what have school inspectors recommended you work on? And what kind of apps, devices and tools do your teachers like to use? Your ICT strategy should fully support your teachers' pedagogy and become an intrinsic part of your Strategic Development Plan or School Improvement Plan, rather than standing alone as a separate objective.

MORE INFO

For more information on rethinking your school's ICT, visit **rm.com/teachsecict**

Needs must

Once you have a clear plan in place, it becomes much easier to determine exactly where your technology needs to be in terms of supporting teaching and learning. The key driver here is for your pedagogy to dictate the technologies you use, rather than the other way around.

We frequently encounter schools whose ICT investment plans are driven by the latest technology trends, where ICT investment hasn't been steered as to how the technology could and would support their pedagogy. Conversely, some schools have always had an ICT suite of 30 computers and as they get older they begin to slow down, the school simply goes out and buys the same again because that's what they've always done.

What if your pupils are only really using them to write a few documents or do some brief research on the internet? In that case, you would probably be better with something like a Chromebook, which is half the cost of a PC so you're immediately reducing your spend as well as using a more collaborative tool which will help give your students future career skills.

Online delivery

If you move towards internet-based devices, then rather than having a large capital outlay on hardware and associated maintenance and support costs, you could become a 'serverless school' where services and systems are delivered to staff and students through the internet. This can be a really effective way to reduce your ICT spend as it allows the costs to be spread through a friendlier revenue model, and means you can opt for more cost-effective internet-optimised devices for your teachers and students. This model not only makes financial planning easier but reduces the need for schools to build up a capital fund for future ICT purchases.

Usability is improved too, as staff and students can access systems from anywhere, on any internet-enabled device, rather than just within the school network. This allows Senior Leadership Teams to access the MIS from home or students to collaborate on and complete projects in the evening.

These cost-effective technological trends place ICT back under the control of your senior leadership team, meaning precious budgets can be spent in a manner that provides the maximum return for your school and better supports your teaching and learning objectives.

Rethinking the technology you're using and making sure it's fully aligned with your pedagogy and teaching needs is the first step in making sure your ICT strategy works for your school – and for your budget.

ABOUT THE AUTHOR

Martin Pipe is head of service design & scope at RM Education.

ACCESS: ALL AREAS

At Priestnall School in Stockport, technology plays a big part in ensuring that every student is supported to succeed, says Lucy Collins

With over 1,200 students aged 11-16, Priestnall School is located in Stockport, Greater Manchester. Priestnall has a truly comprehensive intake which serves the community in which it is situated. As an inclusive school we have a range of students with differing needs and are therefore constantly looking to improve provision, especially with regard to the use of technology. As we strive to move with the times and ensure students are exposed to as much modern technology as possible, we share a firm belief that investment in technology and equipment will best prepare our students for their future careers.

We have approximately 300 student computers based in nine ICT rooms around school, with a further 130 staff computers. In the last few years Priestnall School has also invested in 150 iPads for student use, divided equally between the five school colleges. Teachers can reserve the iPads for lessons and use them with students to research topics, film documentaries or for controlled assessments, to mention just a few of their uses. We have also invested in some external keyboards that are compatible with the iPads – these seem

to be a particularly big hit with some of our SEND students, who find that they can type much quicker than they can write; in addition to being a popular and cost-effective solution.

Sure solutions

An invaluable piece of software that we use at Priestnall School is the Read&Write programme which is installed on every single machine. Developed by Texthelp, this software is an assistive learning solution for people with learning difficulties, dyslexia or visual impairments, as well as being extremely helpful for people learning English as an additional language. This software is used by millions of people every day in schools and in the workplace. Many of our SEND students use this software in a classroom or exam environment to help with their comprehension of text on screen. The student can choose the pitch, speed and volume of the voice as well as selecting a suitable accent from the many options built into the software. They can even customise the toolbar to suit them. The student then prompts the software to read the text to them or to read their written work back to them to ensure it makes sense. Without a doubt, this has been an invaluable software tool for our school.

We've also invested in a voice software programme called Dragon, which types as you speak, and over the coming months we will be introducing this to more of our SEND students, who can often struggle to transfer their ideas to paper easily.

Prior to the recent GCSE exams we also purchased some Exam Reader Pens – a long-term investment which will reduce the cost of live readers in exams. The Reader Pens are approved by JCQ and other exam boards and no special access arrangement is required for their use in exams. We have found them invaluable in exams, especially for those students who do not qualify for a reader. The student can use the pen independently to scan the printed word(s) and the text is then read back to them via

headphones. We also have Reader Pens for classroom use which include a built-in Collins Dictionary – a feature which, for obvious reasons, does not come with the Exam Reader Pen. More and more of our students are using these pens in the classroom and for formal exams and assessments. The students like the fact that they are easy to use, are very subtle and they don't draw attention to themselves as much as they would with a live reader sat next to them.

Equal opportunities

The developing use of technology has been very important for us; having 66 of our current cohort accessing one of, or a combination of 12 different types of access arrangements, we need as much assistance as we can to ensure no student is disadvantaged as a result of their specific SEN or needs. The use of Lucid EXACT to support screening and application of access arrangements has assisted massively, especially as for each of this year's 66 applications we estimate that it takes approximately six hours (on average) per student to assess, and apply!

To conclude, Priestnall School is proud of the fact that all our SEND students are given the same opportunities to learn as everyone else and, perhaps more importantly, have the same opportunities with regard to assessment and examinations. We are trying hard to keep up to speed with new technologies emerging in the market and ensuring, where possible, that we provide our students with the technology and equipment to progress at the same pace as everyone else. Knowing that our students can work independently before they leave our school is a huge challenge, but one that we are more than happy to take on; especially as the core values of Priestnall School are 'educating for life'.

STUDENT VOICES

"It's nice to know that there are resources available for me to use because I don't have the same learning capabilities as most. I have been shown how to use the Read&Write Gold programme so that I can listen to text being read out to me – this allows me to digest the information better and gain a clearer understanding of the text. I also like the Reader Pens as I can scroll over words or sentences and listen to it being read back to me rather than having to read it myself. The voice assistive Dragon software is also really useful – I can speak into a microphone and the computer will type what I'm saying, which means the text is much more fluid than if I were writing it myself. I think the provision of technology at Priestnall School is really good for all students, but the assistive technology is particularly helpful for those with specific learning difficulties. The teachers ensure that we all receive the best possible support which is tailored to our own individual needs."
Student, Year 10, dyslexic

"Curriculum support has provided me with an iPad and external keyboard which means that I can type all my lesson notes, enlarge them and print them out so that I can see them better. Without access to this kind of technology I would really struggle to read my notes, so I'm very grateful that this provision has been made for me."
Student, Year 7, visually impaired

ABOUT THE AUTHOR

Lucy Collins is an exams intervention and access assistant at Priestnall School, Stockport.

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IN THEIR HANDS

Sam Garner considers how assistive technology can support students with SEN – for learning, and for life

Oh the good old days when I had a team of 30 TAs supporting SEN students in class. Or even the luxury of sometimes having two TAs in a class where there were several SEN students who needed help. Unfortunately, those days are gone. Budgets have been cut and the emphasis is on quality first teaching rather than in class TAs. Some schools have even got rid of TAs completely.

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Whilst lamenting the old days I actually think that most students will benefit from the new ways. I know that in my own practice, sometimes I became so focused on providing in class support I didn't consider how this would be carried on once the young people in question had left school. Yet, I had a responsibility to my students to prepare them for later life - and this goes beyond asking 'can you catch a bus and how good are you with money' in the statement reviews. We are under so much pressure to achieve exam results we can forget that it's not just about preparing students for tests. In the absence of TAs, we are having to look at tools and techniques that allow for more independent working from our young people. This can only be a good thing for their future success; being independent in school means being independent in adult life.

Assistive options

Assistive technology (AT) provides us with a host of tools and techniques we can use to help our SEN students become independent. I will be the first to admit that I sometimes struggle to keep up with the latest technology; but education conferences and magazines are a great help.

Whilst sometimes new technology can be cumbersome for us to learn we all know the students usually take to it like a duck to water. Aside from mobile phone technology, there is also lots of AT that won't cause trouble in class because the student is playing music on it or googling something completely inappropriate (that has reminded of the first time I used You Tube in a lesson... but its best I save that for another time...)!

Evidence shows that using AT can not only improve literacy and numeracy skills, but it also has a massive impact on the confidence and social status of students who use it. It's far less stigmatising and more likely to become part of a young person's daily learning habits.

As an Access Arrangements trainer and consultant I so often see and hear stories of students whose marks improve when using AT over a human TA. Young people comment that they are more comfortable using technology as they can control it; they feel uncomfortable asking a TA to read the same thing over and over until they understand it. Not only is it more cost effective in the long term but we are preparing them for life after exams. Also, reading technology can be used for the English GCSE reading paper whereas a human reader can't – why limit students, then, by not making the most of it?

What works

Yes, I appreciate that not all students can use AT and in those cases TAs will have to be available until something else is invented. I am also told that students aren't always very proficient in using the AT, and so would be disadvantaged – this is particularly cited when I recommend using word processors instead of a scribe for an exam. However, as I always say, if the student had used them from Year 7 they would be proficient by Year 11. They can use a mobile phone, after all – and besides, it goes back to the real world again: I don't know of any employer that would hire a TA to scribe for a worker because they 'weren't too good on the computer'.

So let's embrace AT and do as I often did: if I couldn't understand how to use the technology, I asked the students to work it out and show me!

ABOUT THE AUTHOR

Samantha Garner is international schools sales and education adviser at Scanning Pens Ltd (**scanningpens.com**)

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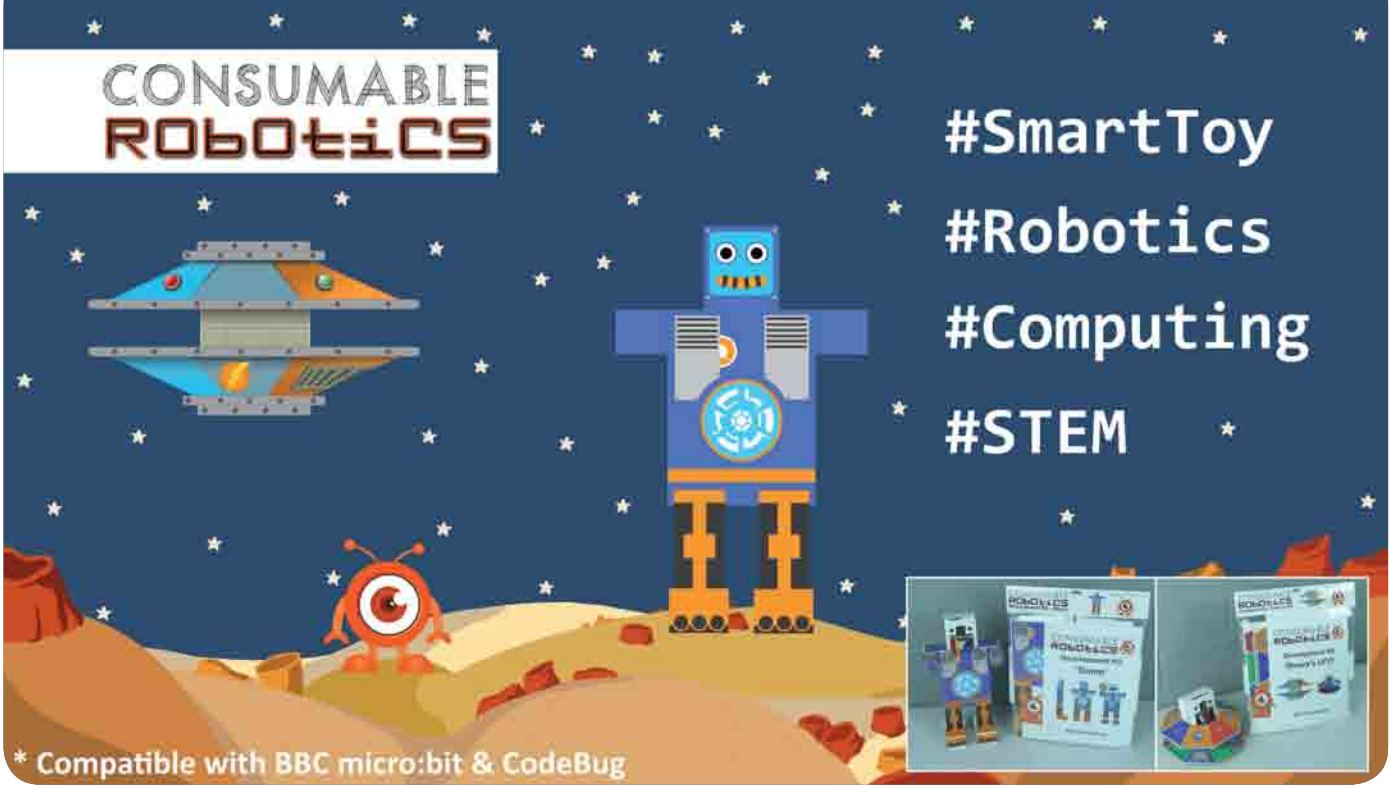

BRIGHT IDEAS

With the launch of its new brand, Consumable Robotics, CBiS is determined to inspire real excitement about STEM

Pokémon Go might be doing its best to make augmented reality cool for kids but one UK company has it beat – CBiS Education is set to make STEM a hot subject in classrooms up and down the country with the launch of a bright new brand.

Consumable Robotics is a development kit that works with the BBC micro:bit and CodeBug. It was conceived as a way of helping students develop an interest in STEM subjects and learn about things like robotics, coding and the Internet of Things. You may think these are buzzwords you'd expect to hear in a geeky web design agency in the heart of the city but not in a classroom filled with 30 pupils from years 7 -11. This, says CBiS is a mistake.

Building confidence

Chris Burgess, MD of CBiS explains, "Our 'open and get on with it' education kits are designed by teachers so that they can be used – rather than be left to gather dust. A survey by The Telegraph in November found that classroom technology was 'rarely used' by half of teachers, with the reluctance often coming down to teachers being unsure how to integrate the technology into the curriculum. With technology in English schools costing an estimated £623 million in 2015 alone, that's a potential £11k per school that could have been used more effectively.

"In this digital day and age, it is becoming increasingly important for younger generations to take an active interest in technology. Getting them hands on with robotics and programming and other STEM skills is the only way to give them the skills they need to thrive in the job market when they leave school. This wont happen if teachers and kids struggle with their classroom tech. Consumable Robotics is built on the need to turn this on its head and engage kids in the classroom by building materials that work with stuff they know and like already – such as the BBC micro:bit."

The firm's unique, low cost 'consumable robotics' development kits consist of cardboard robots which include stickers, electronic components and sensors. The idea is to encourage children to use the pioneering devices in a fun way both in and outside of the classroom. The high engagement development kits are supported by an online resource portal in-line with CBiS Education's approach of Integrated Engagement Learning – which includes a useful blog and activities.

Burgess adds, "It made sense for us to further increase our offering with a new arm of our innovation. Current products already work with the Raspberry Pi, so naturally we are big fans of the micro:bit and CodeBug, as well as the BBC's commitment to helping children engage with technology. We felt the need to step up and help encourage further development; producing low cost robotics that are more engaging and at a tenth of the price of competitors."

Story time

Designed for retail and educational markets, the activities have been mapped for the National Curriculum where possible. The system combines with the micro:bit or CodeBug – as well as other compatible development boards such as the Raspberry Pi Zero – and allows the robots to be controlled by the user. Extremely simple and easy to use, the project can also become Internet of Things related using Bluetooth or other wireless technology.

Consumable Robotics has even developed a backstory to get pupils engaged from the off – an alien inventor, Binary, from the planet Hex has built various inventions, including a robot friend called Dimm, a UFO and a car. The CBiS Education team inadvertently make contact with his planet during a project they are conducting called 'Project Life'. Binary decides to send copies of his inventions to Earth for help working out the bugs. CBiS Education then acts as the conduit for the kits, sending them out as they are teleported to Earth.

MORE INFO

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#SmartToys #STEM #Robotics
#IntegratedEngagementLearning

THE RISE OF THE ROBOTS

Few things bring all the elements of STEM together as effectively – and excitingly – as robotics, says Chris Calver

Robots have captured the imagination of young people since science fiction authors like Isaac Asimov depicted them in their novels of the 1940s and 50s. Often described in humanoid form, these robots were creations of fantasy in the minds of the author and readers, with neither ever likely to encounter such technology in their daily lives.

Little more than half a century later, robots are much more than science fiction and have become part of our everyday lives. Perhaps Asimov's vision of positronic androids is a way off yet, but robots are already commonplace in manufacturing, warehousing, earth and space exploration, military applications and many more areas. Autonomous cars are being tested on our roads and we are even inviting robots into our homes in the form of autonomous vacuum cleaners.

And of course, robots are also used in education; but what can they actually teach our children and why should we welcome them into our schools?

The term STEM is commonplace in schools but in many cases, these key subjects of science, technology, engineering and maths are taught completely independently of one another. Robotics is often used in after school clubs but it can also be a good way of bringing all of these STEM subjects together in a single project – here are just a few examples:

Science

+ Energy changes and transfers

Using simple mechanisms can give a larger force at the expense of smaller or slower movements.

+ Forces and friction

For a robot to be mobile, it needs to have friction between its drive wheels and the ground – too little friction and it will slip, too much and it won't be able to turn.

+ Balanced forces

If a motor and mechanism can't provide the force required to lift a weight, can the addition of counterbalances or elastic/springs assist?

+ Electricity

How much current is required to run the motors of the robot and how does this change with the load being moved? Does the battery have enough capacity to run the motors for long enough for the tasks to be completed?

Technology and computer science

+ Electronics

A robot requires sensors to allow it to

CHOOSING A ROBOTICS PLATFORM

There is a bewildering array of platforms on the market that are designed specifically to make robotics accessible to KS3 and KS4 students – so what are the key considerations to bear in mind when implementing robotics in your school?

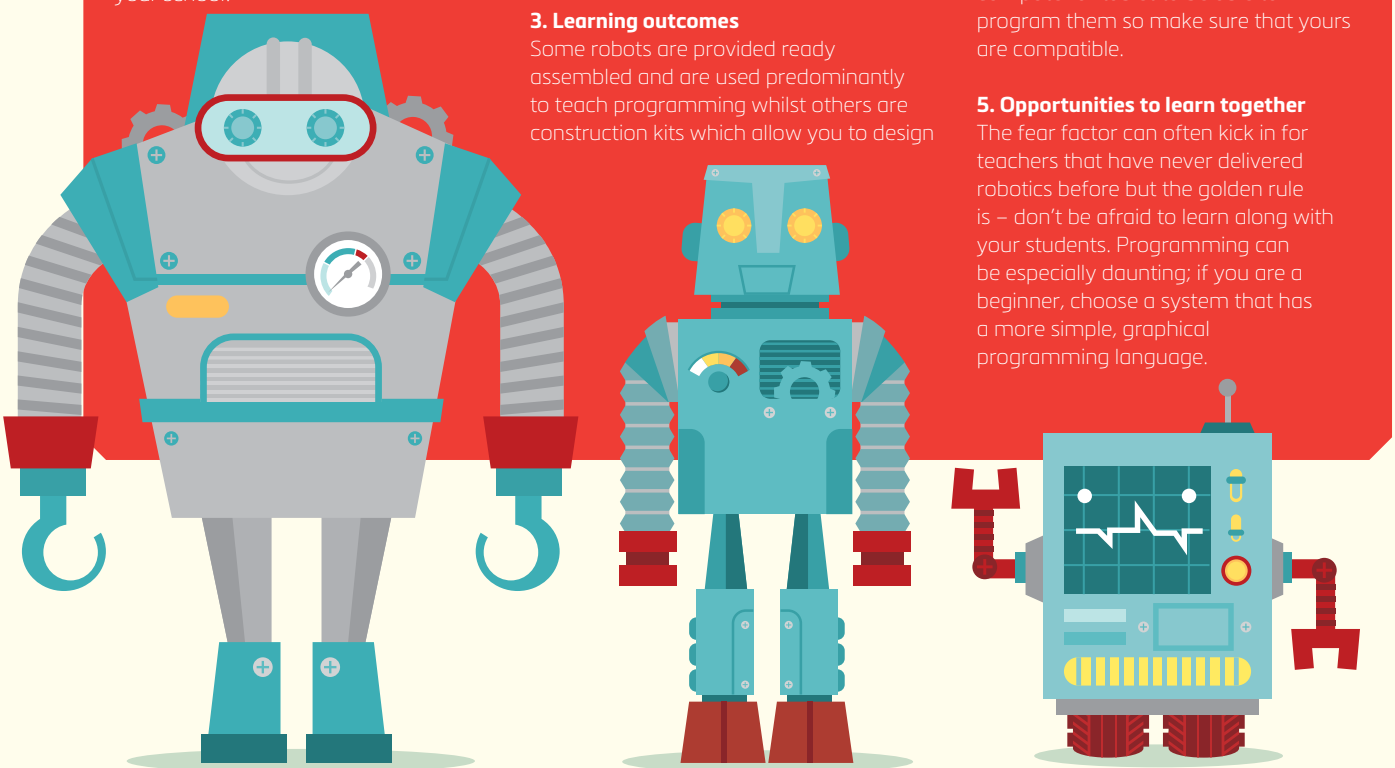
1. Budget
Robots come in many shapes and sizes and can range from a few tens of pounds to many thousands per robot; good ones don't have to be expensive.

2. Skill level
Keeping students engaged is the key to success. This means having a platform that matches the skill level of the students and can grow with them as their skills improve.

3. Learning outcomes
Some robots are provided ready assembled and are used predominantly to teach programming whilst others are construction kits which allow you to design and build your own. If you only plan to use robots as part of computer science, try to avoid construction kits as building can take more time than programming.

4. Additional hardware and software
It's always worth checking what other equipment you need to use your chosen robot – does it come with software to program it? Does it need additional batteries? Most systems require a computer or tablet to be able to program them so make sure that yours are compatible.

5. Opportunities to learn together
The fear factor can often kick in for teachers that have never delivered robotics before but the golden rule is – don't be afraid to learn along with your students. Programming can be especially daunting; if you are a beginner, choose a system that has a more simple, graphical programming language.



interact with its environment as well as motors to move, solenoids to control pneumatics and microcontrollers to process the data.

+ Materials
It is important to select the correct materials for the job – these could be chosen for a combination of their strength, weight, cost and availability. If you are using a ready-made robot, students can examine the materials used for various parts, investigatint and explaining why these were used.

+ Programming
The brain of the robot is a microcontroller which processes data received from the sensors and controls the actuators such as motors and pneumatics. A program (code) needs to be created which will form a set of instructions or rules for the robot to follow. To make an efficient robot, the code needs to be refined so that instructions are executed quickly and accurately.

+ Engineering
The word 'engineering' comes from the Latin ingenium meaning 'cleverness' and ingeniare meaning 'to devise'. Educational robotics uses two main branches of engineering – mechanical and electrical or electronic engineering and requires the application of maths, science and experimentation to devise, test and analyse solutions. Competitions give a real problem to solve and an environment in which to test the solutions to the limit.

Maths

+ Geometry
Mechanisms on a robot require an understanding of geometry to ensure that parts move correctly. It can also be used to simplify designs by using geometry to move other parts of the robot rather than by adding motors or actuators.

+ Ratios and Proportions
Robot designs drawn on paper may be at a reduced scale and ideas might be prototyped in smaller sizes to test ideas before building the full scale robot.

Gear ratios are used to improve performance of the robot – for example, what is the difference between a 3:1 gear ratio and a 1:3 gear ratio? If using a 12 tooth pinion, how many teeth will the gear need to have to achieve a 3:1 ratio?

The wonderful thing about educational robotics is that it gives an applied setting in which to use many different skills which are already taught in the curriculum.

ABOUT THE AUTHOR

Chris Calver is education manager at Rapid Education (www.rapidonline.com/education)

Make STEM real!

Science, Technology, Engineering and Maths are probably the most important subjects in a student's education. A good foundation in these core subjects opens just about any door in higher and further education.

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At Rapid, they certainly know a thing or two about educational robots - and the Ozobot has really grabbed the team's attention. In fact, it is probably the easiest to program that they have ever seen.

One of the biggest barriers with robots can often be related to software rather than hardware because with software comes a whole pile of problems – is it compatible with your machines? Do I need to install drivers? Will I need support from the IT people? What about if I want to use a tablet?

With Ozobot, there is no software to install, no drivers to install, no cables to connect. The robot doesn't need to be connected to your WiFi and it doesn't rely on Bluetooth - so how does it work? Well, in theory, if your device is connected to the internet and can display a web page, you can program your Ozobot. This means it doesn't matter if you are using desktop PCs, laptops, Macs, iPads, Android tablets or even a mobile phone – they can all program Ozobot.

First you need to create your program using the intuitive drag-and-drop software. There are five skill levels to choose from and the higher the skill level you select, the more complex your program can be.

Once you have created a program, you then need to download it to your robot. The downloading process is what makes Ozobot so special – you simply hold your Ozobot up to the screen and the data is

transferred optically meaning there are no cables and no Bluetooth set up to worry about. This unique method of downloading is what makes Ozobot compatible with just about any desktop PC, laptop, Mac or tablet. You can even download programs from the screen of smart phones so whatever IT kit you already have in your classroom, it should be compatible.

So what can Ozobot do?

Essentially, Ozobot is a programmable line-tracking robot, although this simple description really doesn't do it enough justice. It has two motors, one driving a wheel on each side which allows it to move forwards, backwards and turn. There is a multicolour LED inside which can be made to light up any colour you like. It's a great way for Ozobot to let you know what it is doing. Finally, it has a bank of colour sensors on the bottom which can be used to track lines and detect colours on the surface below the robot.

The Ozoblockly program has five skill levels, which means as your students get better at programming, the functions can become more complex. Ozoblockly has all the fundamental program structures that you need to be able to teach – loops, if/then/else statements, variables, subroutines, mathematical functions, Boolean logic, inputs and outputs. There are challenges built in to give students a focus for their programs – simply colour print the challenge 'map' on A4 paper and follow the instructions. Once the basics have been mastered, you can create your own challenges using felt tip pens to draw a map or design them on a computer and print them out. And best of all, the Ozoblockly software is free to use so students can work on their programs at home as well as at school.

MORE INFO

Ozobot costs 32.99 + VAT and is one of a wide range of educational robots available from Rapid Education. If you would like to try the Ozoblockly software, visit **ozoblockly.com** and click on Get Started.

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Subject knowledge

At the heart of GCSEPod are its videos. "We call them 'Pods'," explains Coxon. "Each one is a highly concentrated, 3-5-minute burst of audio-visual learning, with specialist subject knowledge for 20 curriculum areas, written by expert subject teachers then rigorously quality assured."

Narrated by professional voiceover artists and with visuals produced by an award winning in-house design team, every Pod is mapped to GCSE and IGCSE exam boards, and the company is dedicated to keeping up with curriculum and technology changes. "We are committed to an ongoing and very active programme of publishing to ensure we are up to date with new specifications (between 40 and 70 new Pods per month)," confirms Coxon. "No other curriculum support product is producing new content of this quality and at this rate."

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Other digital services focus on providing questions or activities only. GCSEPod is unique in offering both high quality subject knowledge Pods as well as a rapidly growing bank of editable questions, plus the ability to set, monitor and mark homework assignments

Setup and support

Once subscribed to GCSEPod, you will work closely with an experienced member of the subscriptions team and receive a ready made digital and physical launch pack. "We know that there is no end to the number of ways GCSEPod can be used but there is a limit to your time," explains Coxon. "That's why we will help you pinpoint exactly where you want the impact to be and then we can provide suggestions, resources and tailored guidance on how to reach that goal. We're with you for your whole subscription and will ensure GCSEPod continues to support the ever-changing needs of your teachers and students."

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Peter Manns, The Heathland School

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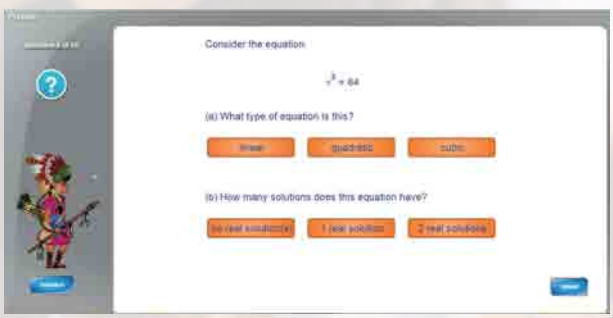

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MATHLETICS

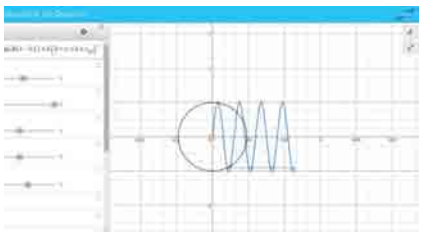
Contact: **www.mathletics.co.uk** Reviewed by: **John Dabell**

Mathletics – the multi-award winning online maths resource for students aged 5-18 – is currently used by more than 5,000 schools across the UK and millions of students worldwide. Its aim is to develop mathematical fluency, problem solving and reasoning skills and it does this by offering subscribers a wealth of digital delights. I first started using Mathletics in 2010 and since then it has super-evolved to include a whole pile of improvements and updates. For example, it is now fully hosted in the cloud and there are considerably more curriculum activities to access. Real world videos help students understand the maths beyond the classroom; there is a ground-breaking new interactive graphing calculator available; there are new student background themes; and a new Reports area has been launched.

Teachers' view

The new-look site is divided into two main areas: for Teachers and Learners, each of which can be accessed via specific logins. Logging in as a teacher opens up a neat and tidy workspace where you will find areas devoted to classes, courses, results, reports, lessons, eBooks, demonstrations, a toolkit and assessments. Easy to access and even easier to use, each area is a vast improvement on what was available before. Everything is geared towards getting the most out of the resource without creating any extra work and you'll find a wide variety of tools which can be used to control the access of classes, whole cohorts and individual learners to particular areas.

Mathletics claims seven key elements to its approach: engage, target, diagnose, assess, report, fluency and mobile. Well, it certainly engages because the design of the site is fresh, clear, fun and friendly. The use of rewards and certificates and the mathematical gaming element mean students are kept on track, entertained, educated and motivated. In terms of targeting, there are plenty of adaptive activities to access as you can choose from 1300 of them, each with pre and post testing. You can easily assign an assessment to a student and look at a full diagnostic analysis in the teacher console, which allows you to see where a student is



in terms of progress and how you can help them improve – including a recommended work plan and activities for students to try targeting specific curriculum outcomes. This makes it easy to benchmark or track improvement and create individual learning pathways. Reports on Mathletics are given in real time and are highly detailed too so you can see exactly what was done and where more help is needed.

I think a major appeal of Mathletics is its flexibility and meticulous approach to differentiated learning. As a teacher you retain a lot of control and have the capacity to modify work to suit individual needs by 'secret setting'. This allows you to give lower ability pupils work from an area below their peers without the student being aware of it, which obviously removes any confidence denting. What is also great about the teacher logins is that you can see on-screen if students finish their work and then re-set tasks accordingly.

Challenge and explore

The Learners' area of Mathletics contains an extensive range of different sections that are designed to support the teaching and learning of mathematical tasks, including live Maths challenges against other learners from other parts of the world, targeted curriculum problems, support material, demonstrations and games. The general gist of Mathletics is to motivate learners to take part in challenges and curriculum learning to gain credits which can be turned into certificates, awards and the ability to spend credits to update their 'avatar'. The My Study section of this area mirrors what you will find in the Teachers' section in terms of activities, eBooks, interactives and videos with the aim of earning medals along the way. Rather brilliantly, students can now use a free mobile app to take their account settings with them, including homework.

As with all systems there are pros and cons. On the plus side, the interactive format combined with the competitive points system can engage and motivate students. The program is in line with the National Curriculum, teachers have full control over what challenges students complete, and it supports assessment wonderfully. It's great that you are able to repeat lessons until students have mastered a concept and earned a score of 100% along with the corresponding reward.

Young people generally enjoy the games and the built-in motivation works a treat. The range of activities and challenges is enormous and will undoubtedly help to improve fluency in core competencies. In terms of room for even further improvement, I would suggest (as a fan) that some activities lack appropriate demonstrations about what to do and this can lead to confusion – for example, some of the worksheets could do with more explanation, and more videos for each lesson would be welcome. The videos are spoken in Australian English and occasionally I have had students complain of not being able to 'tune into' the way certain words are pronounced.

Overall though, the positives outweigh the gripes and when used creatively and strategically Mathletics is a tested, verified and proven resource that can have a significant impact on the results of schools; indeed, my experience has shown that students get the most benefit out of engaging with Mathletics when used over a number of years.

VERDICT

+ It all adds up

Mathletics is an intuitive and engaging resource, bound to improve learners' skills, knowledge and ability in maths, especially in numerical skills and speed.

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† In 2010, Casio launched the world's first Laser & LED Hybrid Lamp-free projector over 2,000 ANSI Lumens. * Whichever comes first.

Q&A

LASER & LED PROJECTION

Phil Clark, head of projection at Casio UK talks us through what the company has to offer schools for this academic year and beyond

VISIT: WWW.CASIO.CO.UK/PROJECTORS CALL: +44 (0)20 8208 9453 EMAIL: PROJECTORS@CASIO.CO.UK

T&I: What projectors are available?
PC: Casio has brought the benefits of lamp-free projection to more classrooms than ever with their budget friendly Core Series, featuring three new models. Boasting increased optical zoom capabilities, higher brightness, RGB, Audio, HDMI connectivity and instant light control the Core is the ideal replacement projectors for schools.

The Advanced Series achieves impressive brightness levels of up to 3,500 ANSI lumens, 1.07 billion colour reproduction and 1.5 times optical zoom for stunning classroom visuals. It also offers extensive connectivity options for teachers including a USB power supply offering support for wireless devices such as Chromecast.

The UST (ultra short throw) also remains a popular option, generating images of over 80" from a distance of just 27cm, virtually eliminating on-screen shadowing, so presenters no longer have to endure the light shining in their eyes. Full features and specifications can be found at www.casio.co.uk/products/projectors.

What are the main differences between them?
The enhanced connectivity options of the Advanced Series make it ideal for environments that prioritise sharing and interactivity. These include wireless, USB and LAN with RGB, audio, 2 x HDMI, S-video interface, and powered USB port. These enable full PC integration with the projector, offering virtually limitless possibilities for pupils or teachers to integrate their devices.

The Core range is ideal as replacement projectors, and is compatible with almost all mounts. Their high brightness equips them for high ambient lighting, and the lamp-free light source ensures images maintain a constant brilliance throughout the 20,000 hour lifetime.

The UST delivers powerful presentations in close-proximity conditions, and is ideal for making an impact in smaller spaces.

How should buyers choose between them?
Buyers need to consider the size of the audience, the proximity to the screen and the type of content being displayed. This will help determine the resolution of image that is needed to ensure that everyone has an optimum viewing position and that data is displayed accurately.

The amount of ambient lighting and throw distance available is also crucial to identifying the best model.

If the buyer wants to employ a 'fix it and forget it' philosophy, then lamp-free Laser & LED models are ideal, because there are no consumables to monitor or replace across the whole 20,000 lifetime, guaranteed by Casio's industry-leading 5 year/10,000 hour warranty.

What differentiates Casio from other projector manufacturers?
We are the pioneers of Laser & LED hybrid projection technology and the only manufacturer to dedicate our whole range to it. Since its initial launch in 2010, this lamp-free method of image generation has transformed learning environments, as the removal of the lamp means images never dim or fades, maintaining constant brightness over its 20,000 hour lifetime. In comparison, the brightness of lamp-based projectors can degrade as much as 50% in the first operating year.

With a maximum of just 120w power consumption, switching to lamp-free projection presents power savings of on average 50% compared to traditional methods. Casio projectors are great for sustainability initiatives. They reach full brightness in mere seconds, ensuring lessons start on-time.

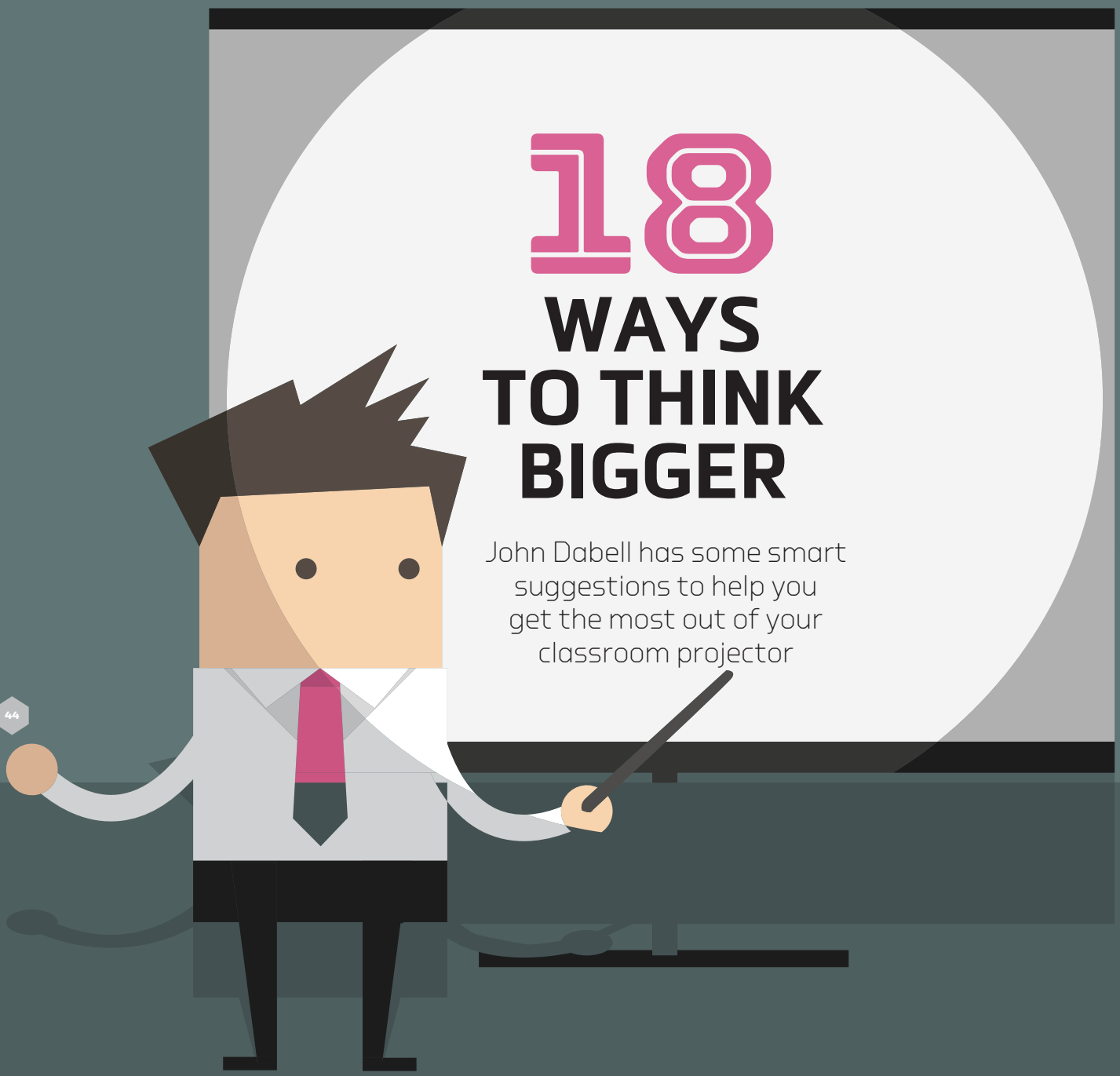
With no lamps, filters, or other replacement parts to change, maintenance costs are virtually eliminated, saving education professionals essential time and money.

Which schools are already utilising this technology?
The incredibly low-maintenance needs of Laser & LED projection has made Casio Projectors a fundamental part of the technology ecosystem across schools, academies, colleges and universities.

Bournemouth and Poole College have made the move to lamp-free, having been impressed by the 'fit it and forget it' ethos. This was born from frustration of lamps failing at crucial moments and high-average spend on lamps per year, compared to the initial investment of a lamp-free unit. Changing lamps became a cumbersome activity that was draining resources, so following advice from Hugh Symons AV, the college now replaces fixtures at the end of the final lamp life with lamp-free models. It was an easy decision to make not only considering the potential savings over the lifetime, but also the benefit of low total cost of ownership offered by Casio.

18 WAYS TO THINK BIGGER

John Dabell has some smart suggestions to help you get the most out of your classroom projector



For years, interactive classroom projectors have been touted as the next best thing for engaging students – but the unfortunate reality is that while they are now practically ubiquitous, in many schools they aren't yet always as 'interactive' as they might be.

True technology integrators know that digital projectors are extremely useful and effective teaching tools that facilitate a range of learning opportunities when connected to a computer in whole class contexts. Further functionality can be achieved by using the equipment with a wireless mouse and keyboard, wireless slate, visualiser or an interactive whiteboard. But creative pedagogy and innovative resources are required, too. Interactive whiteboard providers offer one of the biggest sources of inspiring content for projectors. These companies produce piles of brilliant resources along with lesson sharing communities, forums, blogs and other platforms that allow you to connect with fellow educators using

Project exemplary student work and keep learners aware that what they produce is likely to be published for their peers

the same products as you. And there are plenty of other options out there to explore as you work to keep your classroom full of fresh ideas and your students endlessly engaged. Why not try a few of the following suggestions, and see where they take you?

1 Bring the world into your classroom with Google Earth and Google Maps, using them to inspire storytelling or engage students in solving collaborative challenges: **google.com/help/maps/education/learn**

2 A document camera or digital microscope can be transformational in the way that they bring learning closer to students, especially for demonstrations and experiments. Check out some reviews: **bestreviews.com/best-document-cameras**

3 Move beyond Powerpoint and head over to Prezi; a powerful and creative tool to energise presentations with real impact (**prezi.com**). Another great site is **powtoon.com**, where you can create amazing animated presentations.

4 Documentaries, news clips and interviews offer rich learning opportunities – streaming video can help make connections between class work and 'real life' easier for students. Try TED talks; you can search by topic at **ted.com**.

5 Project exemplary student work and keep learners aware that what they produce is likely to be published for their peers – we tend to work a bit harder when we know our output will be shared.

6 Get creative by reviewing, notating, and sharing any web page with **bounceapp.com**. Pasting a web page address into the bar turns it into an interactive screenshot where students can jot their own ideas.

7 Head to **papapaalive.org** for a child's eye view of everyday life from a school in Ghana, with videos made by the children of Fairtrade cocoa farmers. Each clip is about five minutes long, includes subtitles, and is supported by teaching resources. It's so easy now to connect with classrooms all over the world – use Skype or Google+ to chat with other classes about a variety of topics.

8 Graphs, charts, flowcharts and infographics enable learners to make more sense of what they are being told – project information displayed in a variety of formats and ask students to analyse and discuss. Go to **piktochart.com** for some great ideas.

9 Project practice quizzes and tests, which are a great way to check understanding, as well as guide students in effectively preparing for an exam. Try **quizizz.com** for size.

10 Encourage interaction with digital texts by projecting them to assist discussions, group annotations and debates.

11 Whether it's actively reading a complex text, or dissecting a flower or a heart, you can use your projector for convenient and effective scaffolding and modelling; building students' confidence towards ever greater independence in their learning.

12 Use music clips to inspire critical thinking about language, grammar, and word use; make cultural and/or thematic connections with music; or teach a foreign language. Look at Pentatonix's 'evolution of music' video to inspire students with a musical medley over the decades **youtube.com/watch?v=lExW80sXsHs**

WHAT COULD YOUR PROJECTOR DO FOR YOU?

+
Integrate video and sound, thus increasing attention and retention
+
Allow multiple teaching approaches
+
Encourage student participation and collaboration
+
Improve flexibility in classrooms
+
Spark curiosity and creativity
+
Summon the world into the classroom and engage the whole class
+
Maximise one-to-one experiences, bring concepts to life, make teaching easier and fun

13 Visit museums without even leaving the classroom, thanks to virtual tours such as those of the National Gallery **nationalgallery.org.uk/visiting/virtualtour/#/central-hall** or the Louvre **louvre.fr/en/visites-en-ligne**

14 Students – individually, in small groups or as a whole class – can access quick tutorials for a problem they are getting stuck on by visiting a global classroom such as **khanacademy.org**.

15 Use photography, artwork and other images to inspire creative writing, reflection and analysis from resources like **nationalgeographic.com**.

16 Topmarks – **topmarks.co.uk/interactive.aspx** – is a really useful website that includes an index of dozens of websites, online activities and web-based resources that play nicely with many IWBs.

17 Visit **piclits.com**, a free creative writing site that matches images and photographs with carefully selected keywords in order to inspire thinking and help students write, express themselves and share their work with others. The site provides a forum for creative writing and is an engaging teaching tool for all levels.

18 At **slideshare.net** you'll find endless ways of using your projector, because this site is brimming over with presentations, infographics, documents and inspiring videos created from around the world.

If you want to go even further then I strongly recommend you visit **boxoftricks.net**, where you will find a list of over 200 internet links that will transform the way you teach and use your projector. Collected and compiled by teacher Jose Picardo, this impressive website will lead you to pastures new and have you inspired in no time.

ABOUT THE AUTHOR

John Dabell is a teacher in Nottingham with 20 years' experience teaching in primary and secondary schools as well as higher education settings. He is the author of maths, science and English books and is a trained Ofsted inspector.

Q&A

AVCOM

AVCOM's Max Crowe is as passionate about learning as he is about the products he sells

VISIT: AVCOM.CO.UK CALL: 0208 735 3424 EMAIL: SALES@AVCOM.CO.UK

T&I: Why should schools come to you for their AV requirements?
MC: Along with selling the equipment, we also understand how it works. At AVCOM, we have always taken pride in our ability to offer bespoke advice for any audio visual solution. One of the key points we offer as a business – besides a great range of products – is a wide knowledge, coupled with a passion for encouraging learning and growth. Sharing these qualities with the education industry is what makes us the perfect secret ingredient in any school's proverbial AV recipe.

Why have you chosen the GOAKE range of educational products?
GAOKE products have proven to be the most cost effective range on the market and as such, we are proud to have been working with them since 2015. After seeing what the products could do, we were pleasantly surprised at the low prices. Their performance is incomparable and we feel that along with their good looks, the quality speaks for itself. We are more than happy to demonstrate this in person at our offices in West London.

Are you able to advise schools on the best purchases to meet their needs?
Absolutely. I am confident that by combining our expertise with our passion for giving the best advice from start to finish, we are able to meet the AV needs of any school or other business, at any given time. Over the course of our 30+ years trading history, we have worked with many schools as part of our extensive customer base and have received consistently positive feedback accordingly. I also deem it vital that we communicate as much as possible during the initial point of contact, as this really gauges an understanding of exactly what is needed for the task at hand.

How important is customer service to you, as a company?
Like any industry, audio visual supply can be competitive. This is why we value the relationships we have with our customers over all else. Great care is taken when starting a project so we can ensure that through detailed discussion, every single base is covered. Moreover, we believe customer service doesn't end at the point of purchase, so we pride ourselves in our ability to offer indefinite support and advice – Just call our office. Our dedicated approach to customer service is immediately noticeable from the moment we answer your call, and I can guarantee it will remain consistent as we help you to achieve perfection. First impressions are everything.

THE BIG PICTURE

Discover a new camera that could change teaching and learning in your classroom...

The HUE HD Pro classroom camera and visualiser is the latest addition to the HUE range of USB cameras. This clever gadget can view a full A4 and project it onto the whiteboard via your PC and projector – what's more, at only £44.95 + VAT you can afford one in every classroom, especially if you take advantage of the current limited offer: buy 5, and get an extra one absolutely free!

Go to www.huehd.com/schools/hue-trials and register for a free, 30-day trial

Available in four striking colours, this incredibly user-friendly camera has all kinds of appealing features, including:

+ The length of the neck, making it perfect for viewing a full A4 page
+ The built-in LED lights, which will help illuminate your subject
+ Compatibility with Windows and Mac OS X
+ Bags of character – just like its older brother the HUE HD camera, but with a new design for the head and base The HUE HD Pro also comes with specially designed software, HUE Intuition, so you can master the full functionality of the camera with ease.

HUE Intuition allows you to:
+ Record video and sound and save movies locally, email or upload to YouTube
+ Annotate images and save as JPG/BMP /PNG/GIF
+ Take snapshots
+ Take multiple images over time

Use the HUE HD Pro for:
+ Demonstrating a science project
+ Taking snapshots of students work
+ Recording a technique or experiment and replay it to the class
+ Stop motion animation
+ Time-lapse photography
+ Chatting with remote schools in other countries with software such as Skype™

"A HUE Pro Camera is ideal for getting together, getting focused and getting down to the business of learning. Use the HUE HD Pro as a basic microscope, use it for student presentations, Vlogging, video chats with other schools, or whatever you like... but above all just use one – it offers more than a fixed webcam ever could and it could open your eyes to the possibilities of teaching things differently."
Review – John Dabell, Teach Secondary magazine

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For many years schools have benefited from the option of using datalogging sensors in the classroom to record measurements and analyse the results of practical experiments. PASCO Scientific's award-winning, state-of-the-art sensors, and data collection and analysis software are easy to use, cost-effective, and work on all your devices. PASCO's 21st Century science solutions are exclusively available in the UK from SciChem, the UK's leading provider of school science equipment.

Practical experience for students

Giving students the opportunity to get hands-on practical experience that gives a meaningful flavour of real-life scenarios is one of the key reasons for introducing datalogging sensors to your science lab. Another explanation lies in the fact that since results are instantly recorded - and charts and graphs are displayed even while data is being collected - students are allowed more time for reflection and interpretation of the data, giving them a greater understanding of the practical science.

Peace of mind for teachers

Being secure in the knowledge that your chosen sensor will connect instantly and reliably with your device enables you (and your students) to give your full attention to the experiment.

Teachers also clearly require the equipment to stand up to the rigours of any classroom or field-based investigation – such as that offered by a Scandinavian winter, for example.

Going wireless for clutter-free measurements

2016 saw the introduction of a revolutionary new line of datalogging sensors from PASCO Scientific that enables students to take a fresh approach to their studies. Initially launching with Wireless Temperature, Pressure, pH and Force Sensors, the range has since been extended to also include Voltage, Conductivity, Light and Current Sensors.

The latest PASCO sensors are completely wireless – Bluetooth Low Energy is incorporated within the sensor itself – so that they can connect seamlessly and directly to your tablet or computer. Not only does this eliminate wires and cables, it also removes the need for additional interfaces, reducing both clutter within the classroom and the investment required to carry out cutting-edge datalogging.

Wireless forces and motion studies

Considered to be the greatest innovation in physics teaching since the photogate, PASCO has also introduced Wireless Smart Carts – which wirelessly measure position, velocity, acceleration and force!

PASCO's Wireless Smart Carts build on the heritage of traditional dynamics carts and systems, but with the added advantage of embedded wireless sensor technology. This recent innovation means that forces and motion experiments can be carried out without the distraction of trailing wires while giving greater freedom to carry out experiments away from the traditional dynamics track. The carts seamlessly connect with your device (desktop or mobile) and data can be recorded and analysed using either SPARKvue or Capstone Software.

Secure data connections

Using reliable Bluetooth data connections between your device and your sensor ensures that your data is not at risk from Wi-Fi blackspots, and can also be used to connect devices and sensors in field-based experiments where Wi-Fi may not be available. PASCO's new sensors connect seamlessly and rapidly with the device for a simple and pain-free experience.

A versatile technology partner

PASCO's sensors will connect to any Operating System – Windows PC, Mac, iPad, Android or Chromebook. So whatever your school's preferred technology, PASCO datalogging solutions may be implemented.

Elevating the technology and the teaching

Bringing increased technology to the sensors at a lower overall cost means that schools throughout the UK can benefit from PASCO Scientific's range of wireless sensors.

To fully appreciate the versatility and ease of use of the PASCO range, simply contact Scientific & Chemical Supplies (the UK's leading supplier of science equipment and exclusive partner of PASCO in the UK) where your local territory manager will be pleased to arrange a demonstration at a time and place to suit you.

MORE INFO

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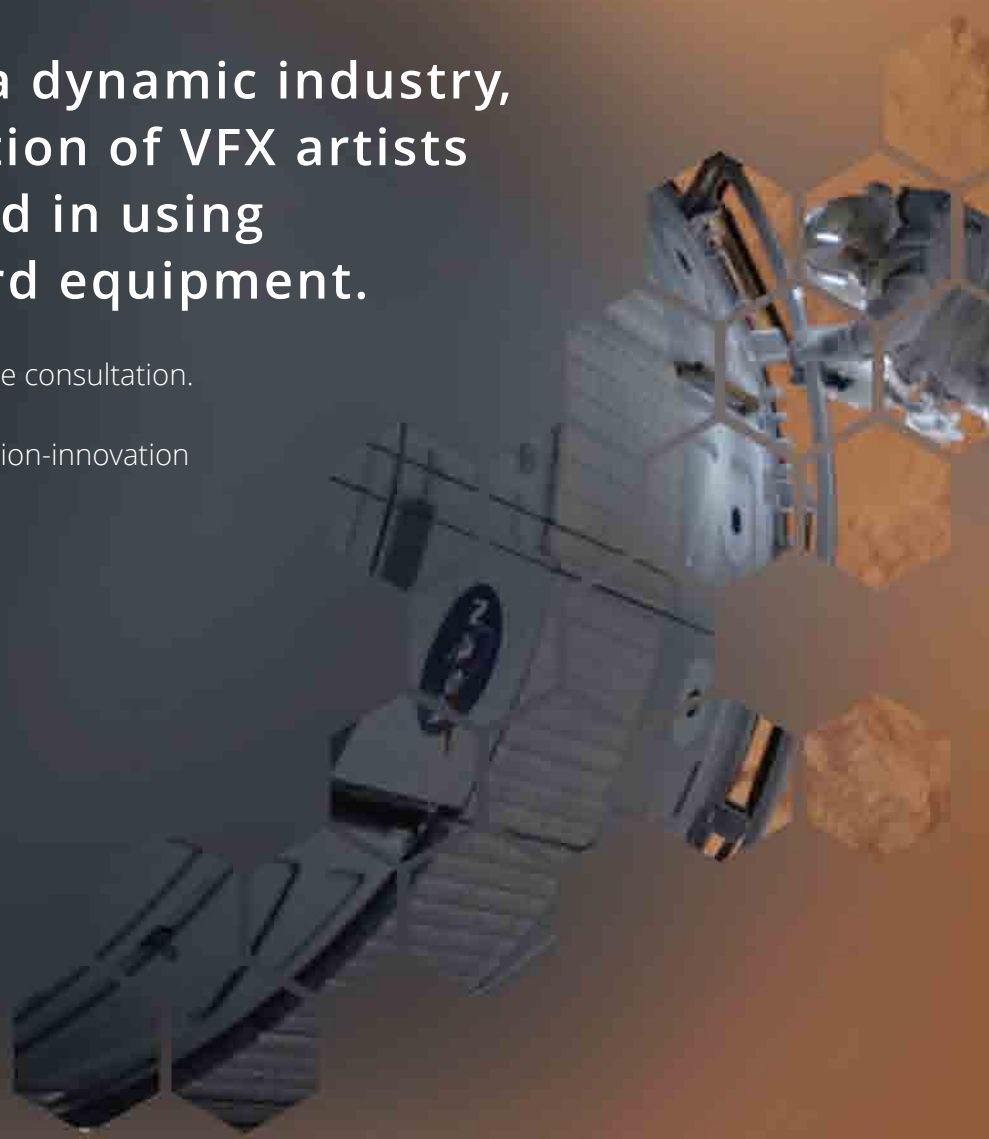


Background image courtesy of Warner Bros. and Framestore

Q&A

DIGITAL MEDIA TECHNOLOGIES

Dominic Minall, business development manager, discusses how Escape Technology could support your school

VISIT: WWW.ESCAPE-TECHNOLOGY.COM/INNOVATION CALL: 020 7734 8809
EMAIL: EDUCATION@ESCAPE-TECHNOLOGY.COM

T&I: Why is it so important for schools to keep their technology up to date? Is it necessary – or even possible – to stay at the 'cutting edge'?
DM: It's definitely necessary, and we've found that it is possible too. Production technology moves fast, so professional practices are constantly evolving. We know from our clients in the visual effects industry how important it is for them to hire graduates with the right skills.

Inevitably, it's the role of education to provide courses that reflect industry practice as well as promote creative excellence. We provide solutions for VFX facilities, post-production houses and architecture studios every day, so we're intimately involved in the development of professional pipelines.

We've worked with Uxbridge College and South Essex College to optimise their VFX and game development course pipelines, which has put them at the cutting edge, and are designed to last.

Why are you especially well positioned to advise schools?
Our close ties with both big and small commercial studios mean that we understand the trends that drive businesses, and put us in a strong position to advise educational bodies.

We partner with leading technology vendors such as HP, NVIDIA, Google, Autodesk, Adobe, The Foundry, Pixar's RenderMan, Chaos Group, Wacom, Mellanox — to name but a few. Through those partnerships we hear about emerging technology in development ahead of most trade shows and press.

These relationships put us in a position to introduce our clients to our technology partners, through on-site visits and training opportunities. The schools we advise have access through us to an expert knowledge base.

Can you help schools with anything from minor upgrades to a full system installation from scratch?
Absolutely. For our education clients we have deployed end-to-end solutions incorporating creative applications, desktop


Image courtesy of Escape Studios, part of Pearson College

Escape Technology

workstations, colour grade panels and full supporting storage and network infrastructure. It's important to note that these are entirely the same set-ups we deliver for commercial production.

Most software for education is now free, however for the programs that aren't, we can assist with upgrades and maintenance. In a number of colleges, we've upgraded classrooms with the latest HP Z Series workstations. Students benefit from dramatically reduced render times and can work with multiple software applications at the same time without risking a lag or system crash.

For universities such as Glasgow Caledonian and Northumberland University we've helped build and optimise render pipelines. We aim to deliver an infrastructure that will stand the test of time, but as demands for higher resolution and file sizes increase, we naturally see ever greater demands being put on this technology. In these cases we recommend a scalable infrastructure.

What about ongoing support and training?
A major part of our offering is our consultancy and support services. We're there to help guide the decision-making process, and we're on hand when you need help. For long-term maintenance, our support contracts are there for everything from check-ups to emergency response.

We use our strong partner relationships to provide access to training, which has the benefit of being instructed by the developers of that technology.

What are some of the most exciting solutions you've been able to offer schools recently?
Virtual desktop infrastructure (VDI) is a great consideration for any school, college or university – as it eliminates the need for hundreds of machines in classrooms across the campus. Instead classrooms could access one centralised server, reducing the total cost of ownership while offering better management, security and flexibility.

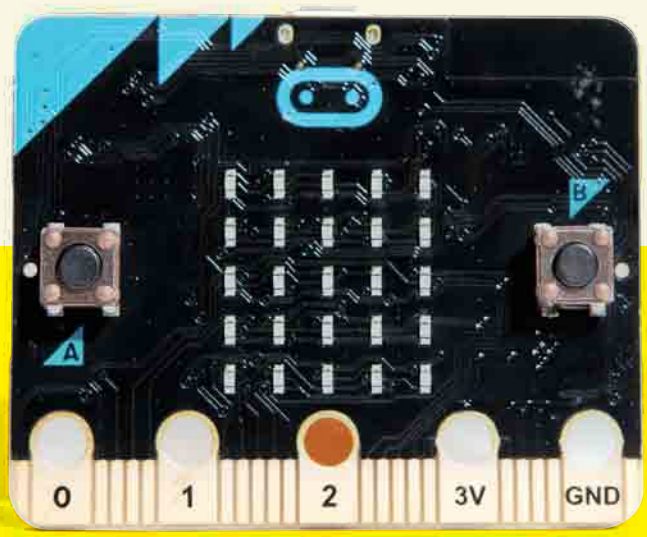
GPU rendering is also a hot topic right now. For many GPU renderers the size of the scene you can render is limited to the maximum size of the graphics card's memory. So it helps that NVIDIA have released the Quadro M6000, which boasts 24GB of GDDR5 memory and 3,072 CUDA cores.

A major development for GPU rendering is Redshift, the world's first fully GPU-accelerated, biased renderer. By enabling the GPU to use the main memory for rendering, you can render scenes that are much larger.

How should schools go about finding out more about what you are able to do for them?
+ Find out how we work with and support education at **www.escape-technology.com/innovation.**

+ Come along to our next Creative Rooms; join the mailing list to be notified when tickets become available: **www.creativeroomslondon.co.uk**

+ Contact Dominic Minall, who can help arrange a consultation: **education@escape-technology.com**



BITS AND PIECES

So, the micro:bits have (finally) arrived in schools – will they really have an impact? According to Crispin Andrews, that rather depends on what teachers do next...

After three false starts, the BBC finally sent out its one million micro:bits, just before the beginning of last summer term. By the time you read this, Year 7 students around the country will have had a whole term and a summer holiday to sell their computer to their older brother, put it on eBay... or, it is hoped, perhaps take their first steps towards becoming the next Steve Jobs.

BBC micro:bit is supposedly the biggest thing to happen in computing since the Raspberry Pi. But why has it been distributed to schools? Moreover, why was it sent out to one year group only – at about the perfect time to make sure the kids wouldn't be able to use it in class?

Well, first of all there's the conspiracy theory. This suggests that the micro:bit was rushed out, with all that hype, at that particular time, in order to catch the summer holidays market for the, now commercially available, version - released at the end of May. Even if most of the year sevens who got the free computer never use it there's profit to be made, runs the argument, as long as enough envious geeks from other year groups cast green-eyes at the advertisements, and puppy-dog stares at their parents. After all, as every good salesmen knows, the most powerful word in sales and marketing, is 'free'.

Early access

But presuming that the BBC has not been buying in highly paid executive sales consultants to boost profits just in case the government scraps the license fee, there are other explanations as to what could be going on.

For example, there's the corporate argument. This is where the BBC tells everyone the reason that the micro:bit was delivered without consideration for school timetables, is that the computers were never meant to be used in class. They're for kids, to use at home or in their spare time. The only reason schools were involved in the hand out was because that was the most efficient, and cheapest, way to get that many computers out to that many youngsters, all at once.

The BBC has said that it hopes that the initiative will start a domino effect. That children who access coding aged eleven and twelve will gain an understanding of basic skills, move onto more complex programming as they get older, take exams, go to university and eventually become the sort of graduate programmers that British industry can celebrate rather than complain about.

Of course, in the meantime, there's no problem if schools want to buy their own micro:bits or teachers would like to set up a few lunchtime computing clubs (just as long as it doesn't interfere with EBacc catch up classes in maths and English, that is).

Skills building

There is an important educational story behind the micro:bit, however, and it's not a new one. For too long, British kids have learnt only administrative skills in IT lessons at schools. Programming is now part of a revised IT curriculum, but it's early days, and in order to speed up the process of giving school leavers the skills that industry needs, the BBC decided that something needed to be done to encourage more kids to find and embrace, their inner geek.

Last October, a study released by digital skills charity Go. On UK, said that over

twelve million people and one million small businesses in the UK lack the skills needed to succeed in the digital era. This report came out just a few weeks after the Boston Consulting Group warned that a talent shortage could undermine Britain's rapidly growing digital economy. The British Chamber of Commerce's latest workforce survey found that a quarter of firms report digital skills shortages.

Industry knocking schools; nothing new, there. But educationalists believe that if anything close to what the BBC proposes is to be achieved, kids will need to use micro:bits in schools as well as at home.

"Each school should have been given thirty to keep," says Dave Ames, a Computing at School Master Teacher from Lancashire. "Just giving them to the kids to take home won't have the impact that the BBC wants."

Ames adds that if teachers are going to use the micro:bit in school, they need physical access to the machines in advance, to work out what they're going to do with them. "If teachers are not confident with the machine and the programming, they're less likely to be hands off and will be more inclined to micro manage lessons," he comments. "This is how you make best use of the micro:bit – by showing kids some cool projects others have done and then asking them to come up with something of their own."

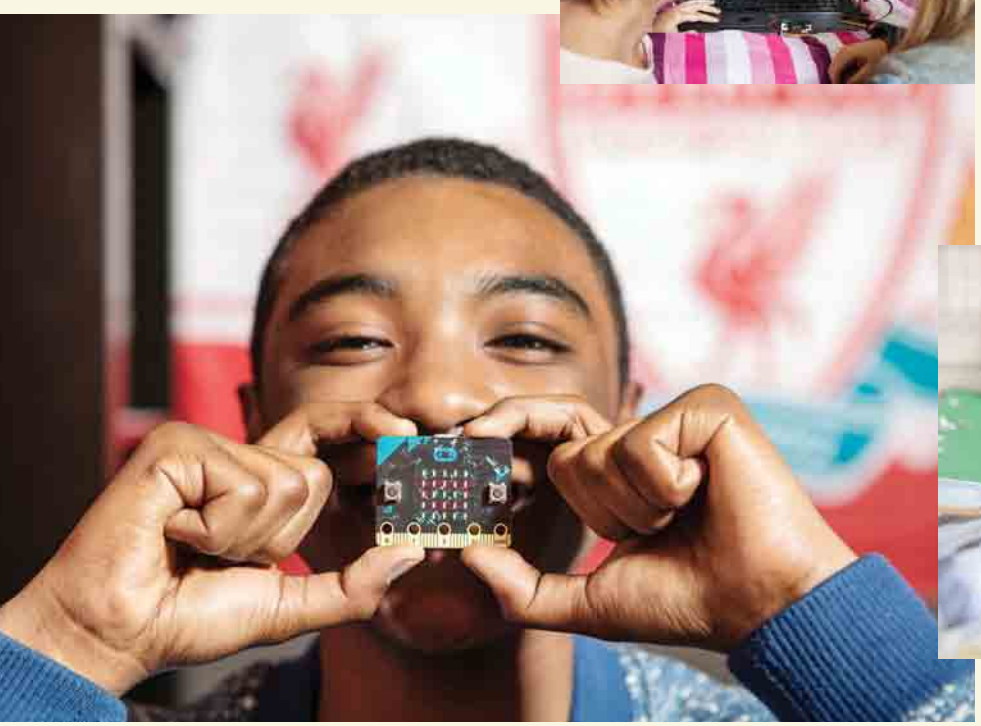
Hands on

Drew Buddie, a classroom teacher and also Chair of Naace, agrees. "Teachers need to trust kids more," he observes. "The problem with using schools as delivery mechanism for these devices is that staff tend to think a certain way. We think that if we're in control then we can make sure the maximum number of kids benefit, but if we give over control to kids, the impact is fragmented."

Peter Ashton, a trainee IT teacher at Warwick University, just out of industry, believes schools need to take the initiative. "High ability pupils will use it by themselves, yes," he says. "But for the vast majority, unless they've been enticed into it and given some of the basics, they'll play games on it, but that will be it. To do something themselves, they'll need to know a bit about it first."

Buddie thinks that he'll tell his Y7s that the computers will be used next term, and that they will have the option to leave them in school if they reckon they won't touch them over the holidays or are worried about damaging or losing them. He recommends setting up lunch time and after school clubs – and even weekend workshops, with parents invited.

The consensus about the actual technology is that it's pretty good. It's simple enough for beginners, uses single line code, and has a variety of potential functions – from playing games to creating car alarms and flood warnings. And at only £12.99 each, that's less than £400 for a class set of micro:bits. There's potentially great value here, then – just as long as the school budget isn't already spent for the next five years employing extra maths, English and science teachers to take additional EBacc and SATs revision lessons.



What is in the BBC micro:bit?

+ A magnetometer which detects which direction you're facing and where you are
+ An accelerometer which detects movement and tells other devices you're moving
+ Blue tooth
+ Five input and output rings connect the micro:bit to other devices or sensors
+ 25 red LED lights flash messages, light up, create games
+ Two programmable buttons, activated when pressed.

www.microbit.co.uk

ABOUT THE AUTHOR

Crispin Andrews is a freelance writer, and a former teacher and sports coach.

UP WE GO!

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The very latest printer in the UP range, the UP mini 2, is available at a price of £465 + VAT and includes new features such as touch screen control, WiFi connectivity and built-in HEPA air filtration. The UP mini 2 is safe for children over eight years old and will encourage them to think, design and make in 3D from an early age. They will be able to create and customise their own designs with ease and build one-of-a-kind toys and models, literally at the touch of a button!

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MORE INFO

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CRUMBLE & BUILD-BOT

Contact: **redfernelectronics.co.uk** Reviewed by: **John Dabell**

With far more emphasis now on embedded electronics in the DT curriculum, coding and making are in the spotlight and teachers, especially non-specialists, might be wondering where to turn. You need something robust, simple to use and affordable; look no further than the Crumble.

The Crumble controller is a petite and highly intelligent circuit board designed by Joseph Birks that allows users to speedily and painlessly learn coding using basic electronics. It is made up of a microcontroller, micro-USB port, 2 motor drivers, 4 input/ouputs and power in/out. Connections are made using standard croc clips, so you can easily change things around.

I found the Crumble easy to interact with and that's thanks to the software. It is a very user-friendly drag-and-drop system inspired by MIT Scratch and perfect for pupils without any programming experience. It's also free to download. It works beautifully and children will get results and experience success quickly; deliver the program to the Crumble via a USB, and you are in business.

The LEDs that come with the starter kit, called Sparkles, are the obvious starting points for a small project as these can be daisy chained together and the Crumble can be programmed so that each shows a different colour. If you wanted, you could even solder terminal blocks onto the Crumble, in order to wire connections more permanently.

You can program the Crumble to respond to inputs, such as switches and sensors, and to generate outputs, such as lights, buzzers and motors. There are loads of projects to engage with, but building a robot will excite pupils, which is why the Build-Bot – a simple, wheeled robot that can be put together very quickly – is a perfect introduction; I had mine up and running doing simple turns in around 10 minutes.

Don't worry about getting stuck as there is a getting started guide available, a blog, and a support forum too. The humble crumble is one of our national treasures and everybody has their own idea of the perfect recipe; mine is the Crumble from Redfern electronics. It has STEM coursing through its veins and at just £16.50 for the starter kit and £30 for the Build-Bot kit, we can't grumble at the price of this truly innovative helping of technological genius.

MiND SETS Redfern electronics

Solid evidence

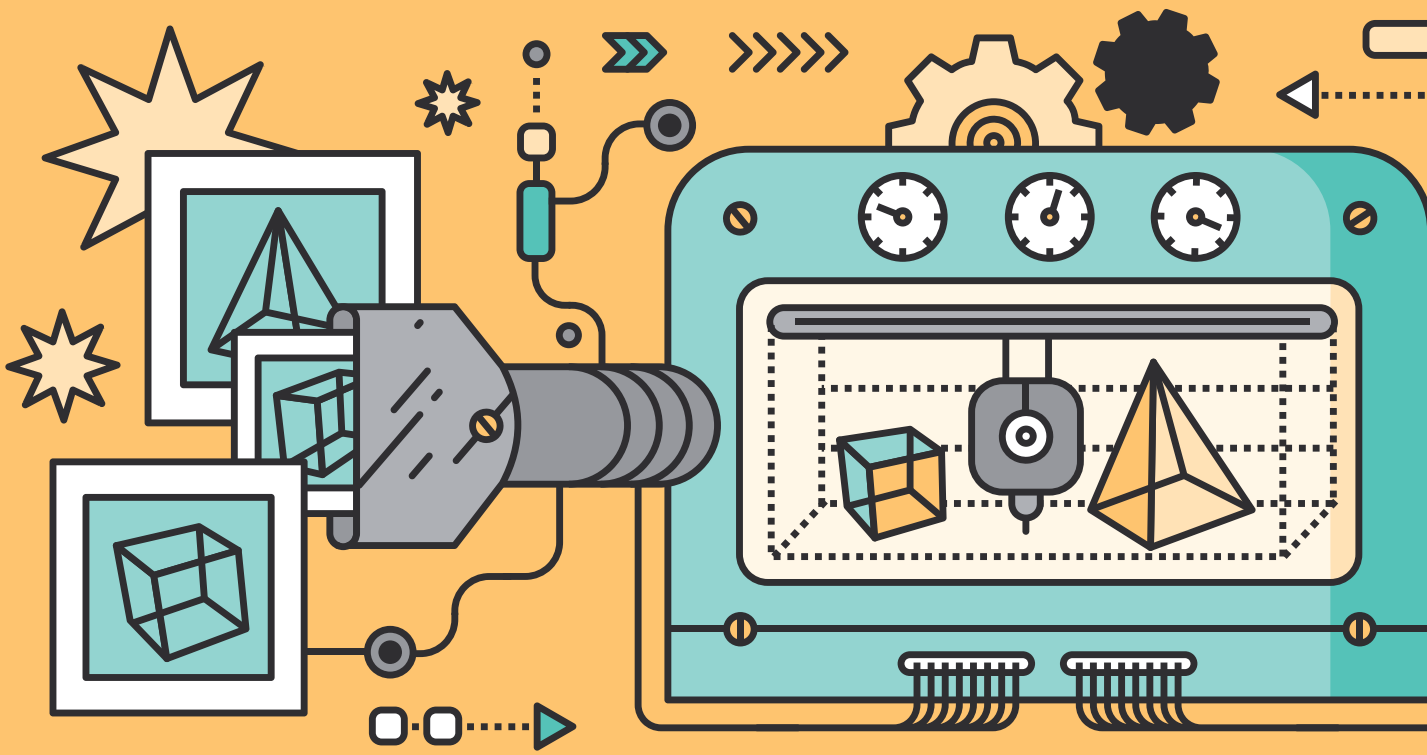
Not convinced about 3D printing for education? Forget the myths and be inspired by the reality, urges Paul Croft

When considering any investment in technology – particularly something that could contribute to students' learning experience - it's vital to separate fact from fiction; and the biggest misconception about 3D printing must surely be that it is 'really expensive'. This simply isn't true; when the technology first became available it did indeed come with a hefty price tag, but – as with the personal computer – things have changed. Entry level 3D printers can now be purchased for a few hundred pounds, and professional desktop printers used in industry, which are perfect for the classroom, are less than £1000. With the abundance of free software and resources in terms of support and lesson plans available from initiatives like the CREATE Education Project (not to mention the option of a printer to try for a month for free), cost isn't the barrier people perceive it to be.

The next myth states that 3D printing is a niche technology that doesn't cut across the current curriculum. Nothing could be further from the truth. As teachers increasingly strive to create kinaesthetic learning opportunities in the classroom, 3D printing offers them in abundance. There is a challenge in terms of CAD skills but many of the software companies now have entry level intuitive options and there are file repositories where every possible teaching aid can be downloaded for free, thus removing that obstacle.

STEAMing ahead

Many of our more forward thinking educational institutions are already incorporating 3D printing into most



subjects. STEM or STEAM is at the forefront of current teaching priorities so this would seem like the obvious place to start looking for examples.

Science students can now understand molecular chemistry through the gamification of learning. 3D printed atoms and bonds allow students to build different molecules. Nothing new, the critics might cry, but the reality is that the kits you can purchase to get the same learning outcomes are expensive and become obsolete when bits go missing. 3D printing is cheap and allows replacements to be provided easily.

In **biology** students can touch and rotate a DNA double helix in their hands, printed for less than £5, and examine fractured bones taken from MRI scans by using free software and 3D printed models.

Physics students are able to create their own rocket car chassis and wheels, and calculate forces and resistance whilst having fun and learning soft skills and crafts in the process.

As a new era of space exploration is dawning students can now learn about the solar system by 3D printing scale models and meteorites taken from NASA data to become tactile teaching aids. Science has never been so engaging!

Creative options

3D printing can be a catalyst for so many amazing projects. Students are combining code and CAD to make product prototypes; Robotics and computer programming are now participatory activities rather than theory lessons.

Some people contest that the A of **arts** should be added to STEM, making the importance of creativity as part of discovery and innovation explicit. There's so much art being generated by 3D printers – a quick search online will bring up numerous examples, and you'll be amazed at what fantastic work students generate when given access to this technology. For millennials technology is part of everyday life and being creative is one of the most desirable qualities in the workplace; it's a no brainer to let students use 3D printing to express themselves.

Engineering skills are in high demand at the moment, with female participation a significant challenge. What we've seen first hand over the last two years of putting 3D printers in classrooms is the way they enable young people to thrive whilst developing the attributes of an engineer. Whether it's mixed teams of students assembling 3D printers in a matter of hours, or exploring the design and manufacture of wind turbines, pupils are now able to have tangible engineering experiences and learn about testing, failure and iterations in a very real way. We've even see life sized 3D printed go karts!

Finally **maths**. It seems that many teachers have always struggled to inspire pupils who don't have a natural affinity for the subject, yet are compelled to study it. Generations have passed through school asking, 'Why am I learning this? What's the point; I'll never use this in the real world?' But consider how much more exciting, relevant and engaging it would be if students could understand geometry and scale through tactile learning, and algebraic equations became physical models rather than abstract concepts.

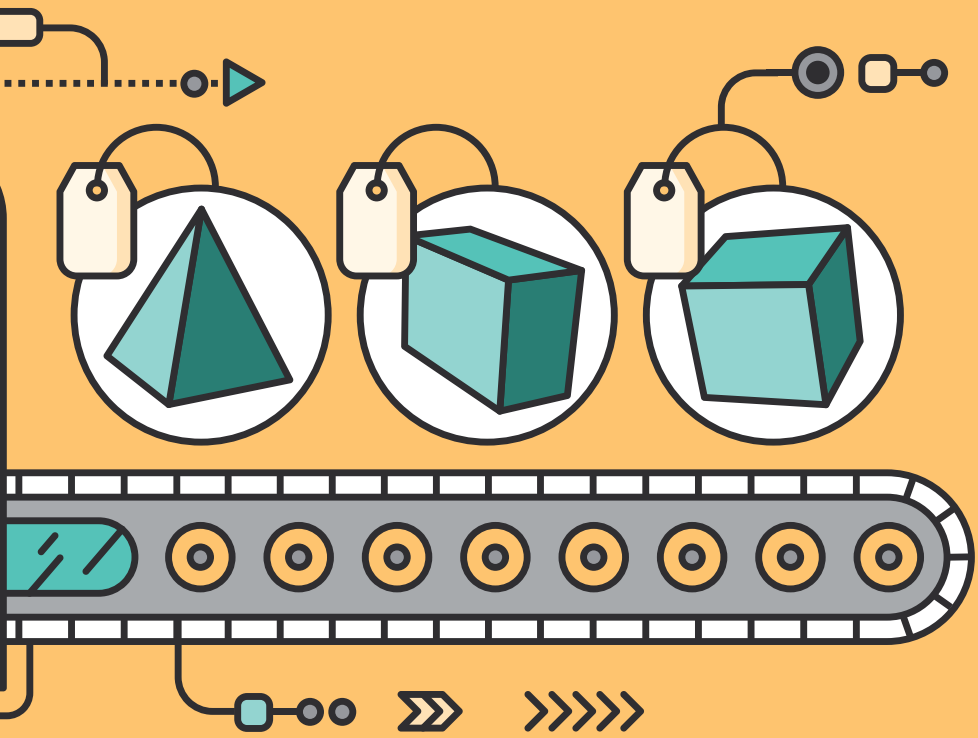
Going further

Looking more broadly across the curriculum we see students learning local **history** (and architecture) by 3D printing historical sites and discovering their story. This means that pupils are appreciating culture and developing social awareness, through using future technologies to learn about the past.

Geography is another subject area that has been reinvigorated by the inclusion of 3D printing. Landscapes gorged by glacial flow are now being studied in 3D rather than from 2D images or expensive field trips. Topographical data obtained from drones or satellites is turned into tangible models for interpretation by students who can analyse them in ways not possible in the past; surely this offers the chance for new learning outcomes?

If we look at macro issues like productivity, and believe that addressing these challenges starts with education, then using 3D printing to engage the producers or entrepreneurs of tomorrow represents a huge opportunity. We have seen primary school children start enterprises in school time and learn business skills that are not only likely to improve their employment opportunities but could also have a significant economic impact in the future.

Clearly, then, there is an abundance of reasons to invest in a 3D printer. Many schools are already realising the cross-curricular learning benefits and not compromising an entire year's D&T budget at the same time. In fact, the question now should surely be: have you got a good reason *not* to buy a 3D printer?



ABOUT THE AUTHOR

Paul Croft is the founder of the CREATE Education Project.

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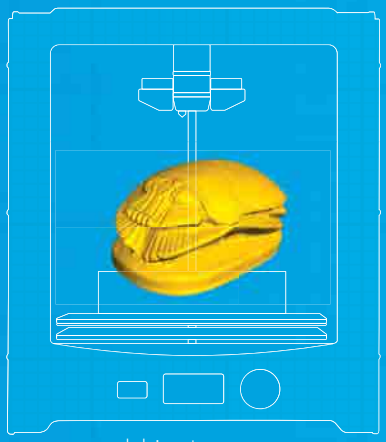
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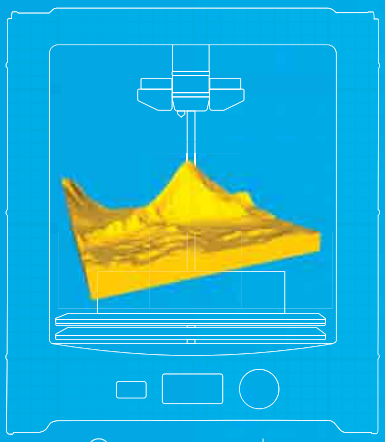
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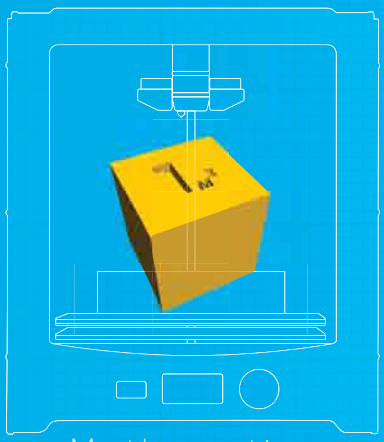
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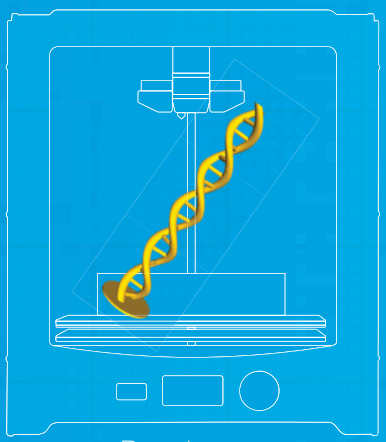
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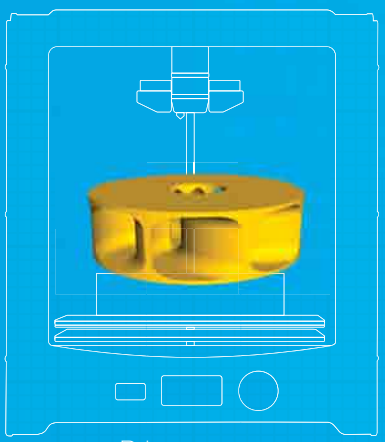
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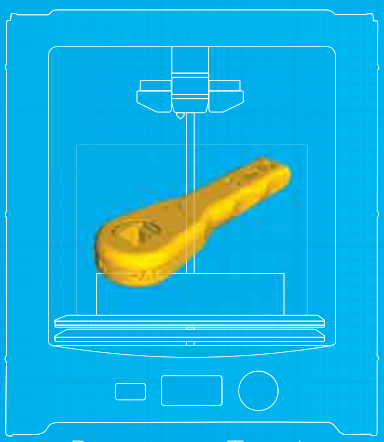
Design Tech

The CREATE Education Project brings 3D printing technology from Ultimaker to your classroom from nursery stage through to university and beyond.

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CREATE SOMETHING SPECIAL

Engagement, creativity and practical support – the CREATE Education Project from Ultimaker has it all...

Ultimaker launched the CREATE Education project in 2014 to make 3D printing accessible to everybody. The CREATE Education Project brings together game changing technology with inspirational content and creative minds. This collaborative platform is designed to provide FREE resources to seed innovation, learning and development. Contributors and community members are provided with a network of people embracing the same passion for sharing and improving access to education benefits. Listening to the challenges educators faced when incorporating technology in the classroom guided the development of the project, which incorporates award winning hardware, free software and expert UK based support. Ultimaker has brought together lesson plans and schemes of work and is uniting the maker community to ensure that teachers and students have all the resources required. Everybody is striving for engaged pupils, innovation and communication in the classroom and seeking collaborative learning opportunities. By embracing the CREATE Education project you will achieve all of these goals make education kinesthetic and equip the next generation with relevant skills to ensure employment in the jobs of tomorrow.

The CREATE strategy comprises six key points:

Community: Whether it's the regional hubs or the local and national competitions that Ultimaker sponsors, collaborative learning is the way to go! By bringing people together and sharing understanding, breakthroughs in learning will be abundant. Ultimaker already has a thriving community – now it wants to extend that to include you! By uniting education institutions with maker spaces and industry partners CREATE Education enables everyone to imagine it >>>make it!

Reliability & Support: Ultimaker has a reputation for being one of the most reliable 3D printers. If something does happen, the team is on hand to help. There are dedicated support lines available during teacher hours, how to videos and guides and an online diagnostic service that will troubleshoot in the unlikely event of you having an issue.

Education: Technology - especially 3D printing - is already impacting many key areas; whether it's prototyping in manufacturing, bespoke replacement joints in medicine, scaled models in architecture or the latest trend in fashion, 3D printing is integral to learning and development and changes the game in design realisation! The CREATE Education Project combines Ultimaker's sharing principles with the needs of the education community to help drive curriculum development and foster new thinking to ensure no child is left behind and that the skills gap is being filled.

Access: Everybody needs access to technology in order to innovate. Ultimaker will appoint hubs for other organisations and its industry partners and maker space network will provide physical access. Digital access can be obtained by using Ultimaker's Cura software which allows an abundance of design software/scanners/downloaded templates to be previewed and then printed accurately in 3D.

Teachability: The best way to show a clear understanding of a concept is to teach it to someone else. Ultimaker's design approach encourages individuals to experiment independently and then share their progress with others. There are testimonials, formal assessment materials and inspiring content to make sure classrooms are full of engaged learners.

Economics: Ultimaker is already one of the most affordable options on the market. Coupled with its reputation for reliability, this means that education institutes cannot afford to be denying students the chance to change the world. Ultimaker offers education institutions a discount for multiple unit orders thus allowing large numbers of teachers and pupils to unleash their creative potential.

Thousands of learners and educators are already reaping the benefits and the CREATE Education project is expanding worldwide...what are you waiting for?

MORE INFO

www.CREATEeducation.co.uk
01257 276 116
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RULES OF ENGAGEMENT

Getting parents and carers involved in their youngsters' learning is a sure recipe for success, says Laura Armfield – and modern technology can make it easy

We all somehow know that it's true: children and young people excel when their parents or carers engage with what they're learning at school. In fact, according to Professor Charles Desforges, "if pupils are to maximise their potential from schooling they will need the full support of their parents".

It makes sense to us that children do better when their parents are engaged with learning at home. However, the issue is not in acknowledging the importance of parental engagement with learning, but in finding the methods, time and resources to do it well.

Perfect partners

I firmly believe that every parent wants the best for their children. The truth for many, though, is that tackling subject knowledge they haven't looked at for many years can be a daunting thing, and the understanding of how to engage is just not there. And the reality is, in the majority of cases, school communication does little to support those parents.

At Parent Hub, we speak to lots of parents and carers to pick their brains on how they feel they can help, and what they can contribute to their child's learning. Time and time again we hear the same story: they want to engage, but do not have the knowledge of either the subject itself or the most up to date teaching techniques to do so effectively.

What, then, do they want from teachers? The answer is honest, open and regular communication to get them involved and demystify the classroom. And in return, an engaged parent is far more likely to get involved when the school needs them; it's all about collaboration after all.

We're not talking purely about involving families in school life, although that's a good starting point, but instead really embracing the untapped resource that they represent. Parents and carers can be part of a learning partnership which has a real impact upon the whole learning process.

Time to talk

It's not just parents who are frustrated; teachers are often left feeling like they are missing out on opportunities to interact with families, and to get them on board with learning. Phone calls, when they happen, are usually focused on behaviour or occasionally giving positive feedback to a few. And for time-poor teachers already under a lot of pressure, the process of making individual calls is often too time consuming and largely inefficient.

Furthermore, when it comes to parents' evenings, they are not only infrequent but can often feel rushed, focused more on giving information to parents and cares rather than getting their input.

So, we're left in a situation with two parties that without question have a considerable amount to offer one another but are struggling to engage in a meaningful way. Could technology provide a solution?

The government review of best practice in parental engagement highlights the role that technology can play in removing some of the barriers to engaging parents with learning, stating that it can provide a "convenient means for parents to access up-to-date information about their child's learning". Used correctly, it continues, technology can allow parents to be "...more engaged with their child's learning, and supports more flexible working arrangements for staff".

Smart answers

The UK is increasingly a smartphone society – indeed, they have overtaken laptops as the primary device for going online. The majority of adults now own a smartphone as they become the hub of daily lives; so much so that over a third of us now check our phones within five minutes of waking up! It seems appropriate then that an app could form a solution to the problem of improving parental engagement by providing a convenient and effective way for teachers and school staff to reach parents and carers. All too often notes home are left crumpled in the bottom of school bags, or at the back of lockers. By using technology, this information has a much greater chance of getting to the intended recipient – the parent; of being read; and of being remembered.

An app-based approach to parental engagement offers a way of reaching families directly to deliver support, advice and tips straight into their hands via the all-important smartphone. This can range from a teacher providing a quick question about a key learning point that a parent can ask their child, to updating parents on the latest classroom projects, or even sending images straight from a school trip or outing.

Of course, it is not about an app replacing parents evening, phone calls and other face-to-face meetings entirely – rather, it's a case of allowing communication to continue on an ongoing and more consistent basis. Simple strategies like this, delivered regularly, directly and in a timely manner, do wonders for parents. They know what to ask, what the answer is, and feel like they are in the loop. Conversations about learning are stimulated. They get more frequent. Children feel better supported; and ultimately, they thrive.

4 STEPS TO BETTER COMMUNICATION

Keep it clear

Teachers should avoid using terminology and acronyms; remember that a parent might not be as comfortable with the ins and outs of the curriculum as you are. Speak in language that is easily understandable and be clear and concise.

Be specific

Giving parents simple tools and ideas on ways to support learning is crucial. Provide quiz questions but be sure to include the answers too! For those parents that are keen to delve deeper, point them in the direction of good quality web resources, where they can find out more.

Involve everyone

Where parental engagement is an afterthought or 'bolt-on' to mainstream activities, it's unlikely to be successful. Gain the support of colleagues and work together to integrate your solutions.

Prioritise training

Staff need support, training and coaching, particularly when working with parents whose backgrounds are very different from their own. They may also need support on how to use new technologies.

Keep it interesting!

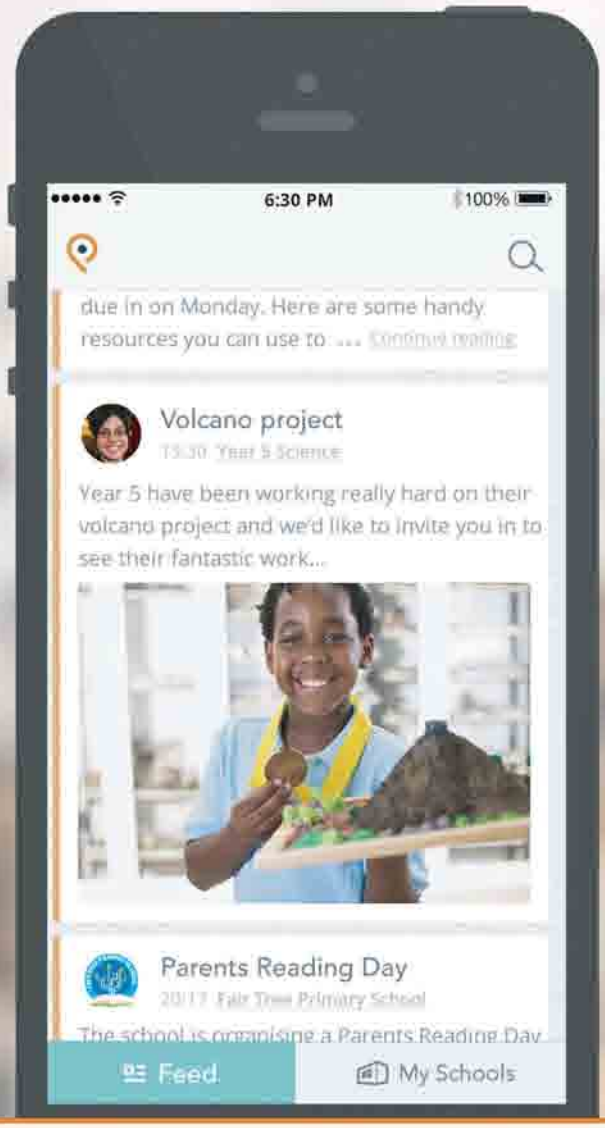
Use images from the classroom and school trips to mix things up and keep the information you provide parents varied and visual.

ABOUT THE AUTHOR

Laura Armfield is a parent, and social media manager at Parent Hub (parenthub.co.uk)

parenthub

If you could create a channel...



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SITE MANAGEMENT

In many ways, a school's website is its window display – showing off what it has to offer for prospective students and their families, as well as current ones; however, many establishments still approach this powerful resource as a somewhat tedious obligation. Phil Holt suggests four ways to improve your online approach – and explains why it matters...

Stay user friendly

Schools aren't experts at designing websites or other technologies, and neither should they be. However, once you've chosen a provider, it's important to think about who will be using the website before you reach the design stages. In the most part it will be students, and parents and guardians of differing ages. Therefore, it's crucial that the design of the website bears this in mind. Avoid disabling zoom functions (which are handy for users that need to enlarge text), or having a cluttered homepage. Usually simplicity is key, and you need to run through this with your chosen provider so you get it right first time, which is important if you are on a budget. This brings me to my next point...

Try something simple

It's understandable that there won't be a large pot of cash waiting to be used for digital projects. However, a website is really important as a way to engage with students and parents and guardians so it requires some investment. If the budget is limited, consider your content management system (CMS) carefully. If a developer builds you a website on WordPress, for example, then with a little training you should be able to update it regularly yourself, so that you don't continue paying for aftercare every time you want to add an event to your homepage. A lot of providers will offer training, so it's something to consider.

Explore portals

Universities are really brilliant at incorporating online portals (take blackboard for example) into their websites for students and tutors. But these aren't just a handy tool for higher education. Students at secondary school are tech natives, so they increasingly expect everything to be available to them online. Their homework, school reports, and upcoming trips or events should be available to them via the website and creating a portal is a brilliant way to have all of this information in one place. You can take this one step further, and have it available on mobile too.

Think mobile

Last year Google revealed that search queries on smartphones now outnumber those on desktop and tablets, and it's likely that this will increase further in 2016. As a result, the majority of organisations would benefit from having some kind of mobile strategy. A portal, for example, could be built into a mobile app so that students and parents can access it on the move, or at school via an iPad. Or if you want to keep it simple, just make sure your website is mobile-friendly, so that it is usable on browsers across different devices.

Phil Holt is managing director at design and digital agency, Web Foundry.

36%

of girls aged 16-18 in full time education - and 15% of boys - say they have witnessed gender discrimination in school among pupils

INSIDE OUT

Transforming your whole school space can give it renewed purpose. There is a lot you can do to rethink the way the building is used and how it is given meaning. Schools can often be a complex hierarchy of centralised power, point scoring and one-upmanship. If yours is like this then you have two choices: move schools and hope that somewhere else will be different... or be an agent for change inside your current school – making a difference for staff and students by transforming it from within.

The biggest shift you can pull off in a school is to make it into an institution that has staff and student buy-in. In other words, a place where mission statements and institutional values actually mean something in the classroom and in the real world. Giving staff and students a genuine chance to have their voices and opinions heard is a goal to aim towards.

Extract taken from Teacher Geek, by Rachel Jones (Crown House) ©Rachel Jones 2015

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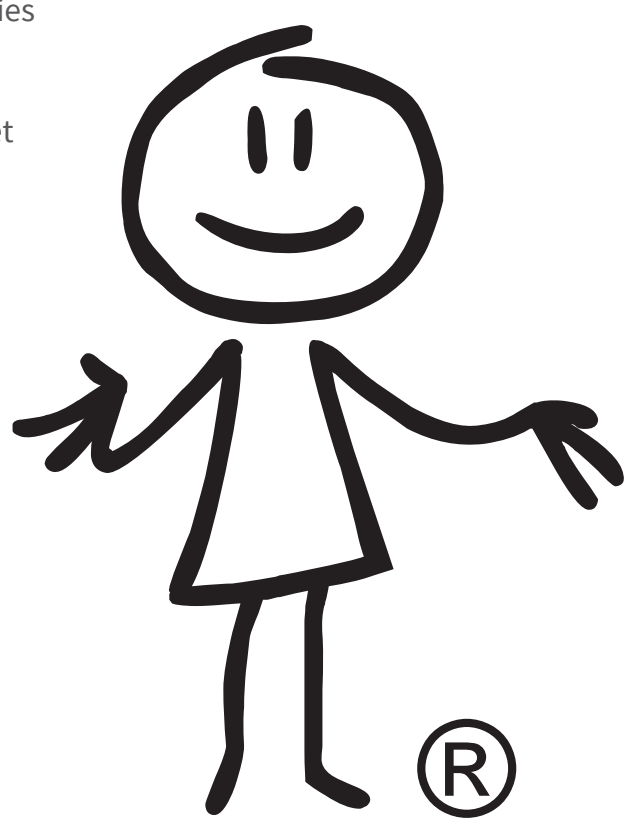

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Q&A

bettermarks®

Collins digital director, Tom Jackson, reckons the company can offer a better approach to maths teaching...

VISIT: WWW.COLLINS.CO.UK/BETTERMARKS EMAIL: EDUCATION.SUPPORT@HARPERCOLLINS.CO.UK

T&I What made you decide to bring bettermarks® to the UK?

TJ About a year ago, we decided we wanted to leapfrog the competition and offer the most advanced digital maths product possible to UK schools. We scanned the market and evaluated a dozen different platforms. bettermarks® was without question the best we had seen and it had a proven track record of improving maths results in other countries.

How is it different from other learning platforms out there?

bettermarks® is not just another bank of automarked questions. It is better in two ways: First, the questions themselves are intelligent and do not instantly mark the students wrong if they are half right. Many questions offer feedback giving students pointers on which bit of their answer is right and which bit is wrong. Crucially, students get a second chance to answer questions. Based on its experience in other countries, bettermarks® has seen that 70% of students get the answer right second time around.

bettermarks® also identifies the areas where students are weak and flags these up as Knowledge Gaps. It then gives the students the chance to close these gaps - starting with easier questions and building them up until they are secure on each element.

Who would benefit most from this approach?

We all know how quickly you need to move to cover the ground in the new bigger and harder maths curriculum. Students who fail to grasp a particular concept or skill really struggle to keep up. bettermarks® intervenes instantly where a student is not secure - you as teachers can see this and it is totally clear to the students too. bettermarks® gives the students the chance to then resolve the problem themselves.

We have had feedback from trial schools that bettermarks® works really well with lower ability sets where it can be difficult to tackle lots of different individual problems at once. There is a very good case for using the pupil premium to pay for bettermarks®.

We have also heard from trial schools that bettermarks® is great for higher ability students where they and their parents are asking what else they can use to help them shoot for an A* or an eight or nine in the new grading scheme.

How long has it been in development and have you had input from schools?

We have been working with bettermarks® for about 18 months. We spent several months carrying out detailed mappings and it then took about nine months in all to adapt the bettermarks® content to match the new GCSE maths specifications. bettermarks® already had a very extensive bank of tried and tested content to use as a basis and we used some of our brilliant Collins GCSE maths authors to make the changes.

We trialled the product with several schools right at the outset. They gave us some very useful pointers on how we should approach the adaptation. Since Easter, we have been building up a network of around 20 trial schools. We will be continuing to work with them over the course of the autumn term to get their feedback and refine the product further ahead of bringing it fully to market.

How can it be accessed?

bettermarks® can be accessed via a web browser on desktop PCs and laptops. Android and iOS app versions are also available for schools using tablets.

What kind of ongoing support can schools expect after signing up?

Our support team will help you get your teacher and student accounts set up. Just send us the data as you have it and we will put it in the right format. Training will be given to your department to make sure everyone knows how to get the most from the platform. We also plan to start a series of webinars on particular features.

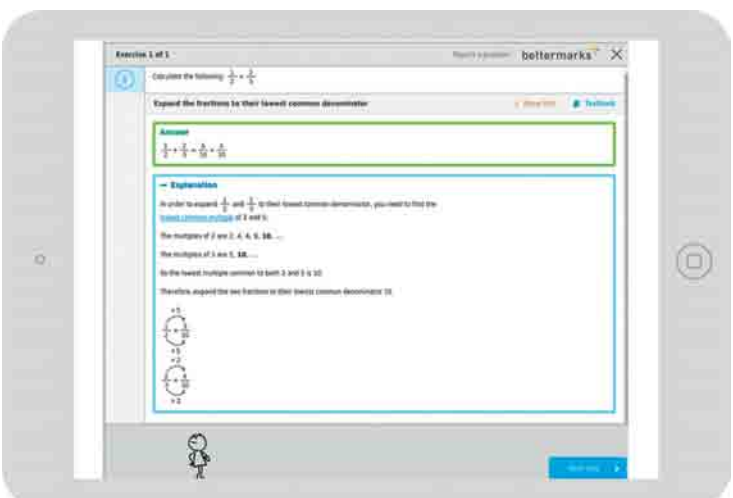
In what direction do you see maths teaching and learning going in the future?

I think adaptive technologies like bettermarks® will become increasingly prevalent in maths. Right or wrong, subjects like maths lend themselves well to the algorithms that drive the recommendations on what to do next if you are struggling.

On school visits, I have heard a number of teachers request a digital product that tracks students' workings and which is clever enough to give method marks. That's more tricky - you still can't beat pen and paper for that, at least at the moment...

Sounds interesting; how do I get involved?

Get in touch with us and be part of the first wave of trials in September. Email education.support@harpercollins.co.uk or go online at **www.collins.co.uk/bettermarks.**



STUDENTS CAN LEARN FROM THEIR MISTAKES, WITH A HINT GIVEN BEFORE A SECOND ATTEMPT AT THE QUESTION. 70% OF STUDENTS GET IT RIGHT ON THEIR SECOND GO.

Collins bettermarks®

KEEPING IT REAL

At Brune Park Community School the importance of putting learning in context is never underestimated, as Stephen Shaw explains

The subjects of science, technology, engineering and mathematics (STEM) can pose challenges to some students, especially when considering abstract concepts and theories, if not considered within a context of learning. In light of this, as part of the school's STEM strategy, we promote the idea of applied context and use real-world examples to enhance the learning experience which, in turn, reinforces understanding and boosts logical and creative skills alongside the goals of the curriculum.

For example, in design and technology, we encourage students to identify needs and opportunities in the community, considering not only aesthetic and technical aspects of their designs, but also cultural, health, industrial and environmental implications. In science, we try to foster students' curiosity about the phenomena of the world around them by working objectively and exploring ideas, whereas in mathematics, ICT and computing, the focus is around building logical thinking, evaluating problems, and developing a conceptual understanding.

I'd first heard of LEGO® Education a number of years ago as part of a Specialist

Schools Academy Trust (SSAT) project, and we wanted to replicate the same tangible, hands-on experience at our school to increase engagement and reinforce learning outcomes.

First steps

We started off by using LEGO® MINDSTORMS® Education EV3 and participating in events such as the Tomorrow's Engineers Robotics Challenge, developed in partnership with NASA. This saw the students working together over 10 weeks to research, design and create autonomous robots that had the ability to complete a series of space-related tasks. Following this, we also hosted our own STEM days, where students from Portsmouth University brought their own kit with them, with us running large scale workshops to get the students experimenting with robotics to solve science and maths problems.

Hands-on learning has a very clear link with science and technology, as the construction elements help students to visualise and test concepts and hypotheses, but the possibilities are unlimited; it can also be applied to English and maths with tailored resources. For example, you can ask students to build or recreate a scene, from a fiction book or to demonstrate an idea from history, geography or a number of other subjects.

Not only does this increase engagement and understanding, but it can also help to develop language and communication skills: if we can get students to build their ideas, we can encourage them to talk and write about them too!

Building bridges

The next step was our recently launched LEGO® Education Innovation Studio. With

this project, we wanted to extend these benefits and work with our seven feeder schools: Brockhurst Primary, Newtown Primary, Elson Junior, Elson Infant, St Mary's Catholic Primary, Siskin Federation and St John's CofE Primary. These schools are keen to boost their STEM provision, and the resources provide the cross-curricular learning environment that's so crucial to Key Stages 1 and 2.

We've also got two local post 16 colleges, St Vincent Sixth Form and Fareham College, involved with the Innovation Studio. Cross-curricular learning is often lost beyond primary education, but the increased variety of subjects at KS 4 and 5 can benefit greatly from the approach, and we believe that the versatility of LEGO Education can facilitate that.

The schools have all contributed to the project and can visit the Innovation Studio to try a variety of different activities as well as work with our students across a number of subjects to share experiences and learning outcomes.

Education for employment

At Brune Park Community School, we are committed to extending education beyond academic progress, with the belief that all students should have access to work related learning, which develops key skills, increases commitment and supports career awareness. Part of this is done through work experience and career sessions in Key Stages 3 and 4, but the Innovation Studio will help us to apply work related skills to a wide variety of subjects and lessons. There are a number of soft skills that can be developed through the hands-on construction approach, including teamwork, problem-solving and pragmatism, all of which are crucial skills in the context of future employment.

This has been bolstered further through the interest of some local companies who were keen to develop links with students and promote the idea of a career in technology or engineering. Amongst our sponsors are a construction company who aided in the redecoration and refurbishment of the studio, and an electrical installation company who also offered its expertise. One of the interested parties is a high-end engineering firm that is currently doing cutting edge research and development work, and another is a local robotics company. These companies really want to foster a love of STEM with young people in the area, and they see LEGO Education as a good way of doing this. For their contributions, we've also offered them corporate use of the studio for their own workshops and teambuilding exercises.

By creating the links with various industries, the students have an even greater opportunity to explore ideas

Inspiration and innovation

The Innovation Studio was launched in early July, 2016; our teachers are all really enthusiastic about the project and even before its arrival were thinking about how they could use the resources in their own subjects and lessons.

By creating the links with various industries, the students have an even greater opportunity to explore ideas and increase knowledge in a real-world context, as they can see how subjects link to business first-hand. For the companies, there are distinct benefits in encouraging this type of learning; it has the potential to bring more prospective employees towards their industry, as well as reducing the skills gap that prevents many young people from entering the working world.

We are creating something that will benefit the entire community, whether that's the prospects of our students, our relationships with local businesses and the community, and our teachers' potential to think outside of the box and teach creatively and effectively, providing lessons that contextualise topics and engage our students in STEM.

ABOUT THE AUTHOR

Stephen Shaw is the innovation and development manager at Brune Park Community School in Gosport, Hampshire.

NEW MONEY

Cashless payment systems mean notes and coins no longer change hands on the premises of many schools – with far reaching benefits for the whole community, says Kelly Clark

At Northgate High School, in Norfolk, all students need to pay for their lunch is their fingerprint.

A biometric payment system allows parents to load up an account – online or via revaluation pay points – so students can simply scan their finger or thumb at checkout, reducing queues. The algorithm-based scan reads between 50 and 130 points on the finger or thumb.

"This allows us to continue with the development of the school meal service and provides us with a more efficient, faster and ultimately better quality of service," says head teacher Glyn Hambling.

"This system incorporates the latest technology and eliminates the need for students to carry cash throughout the day, reducing the risk of bullying. It is also biometric so there is no need for pupils to carry a card. A daily 'spend limit' of £5 is programmed into the system, but this can be increased or decreased on request."

Student details are stored on a secure biometric controller within the school, which only provider Nationwide Retail Systems can access.

The school has also introduced an online payment system, in partnership with its cashless catering system, to enable parents to pay for trips and music tuition.

Modern thinking

Cashless payment was the reason national tutor agency Tutora was launched 18 months ago. Former primary school teacher turned tutor Scott Woodley was fed up with keeping spreadsheets of clients who owed money for lessons they didn't have cash for.

Teaming up with technology analyst Mark Hughes, the pair set up the agency, operated from Sheffield, with 3,000 tutors around the country now automatically paid using the Stripe payment infrastructure.

"The reason we started the agency was that payments were a problem for tutors," explains Mark. "It was a cash in hand business and so if a client cancelled, the tutor didn't get any compensation. Scott had a spreadsheet because of the amount of parents who owed him money or wanted to pay next time or for a block of lessons in advance. It was a nightmare. This way, clients are charged 50% if they cancel and so tutors no longer have to worry about cancellations.

"Parents don't have to worry about having cash to hand; it is all done online and they are billed and invoiced automatically.

"It's the way the world's going with fewer cash transactions."

Tutors, none of whom now take cash payments, are automatically paid directly into their bank.

The company is constantly looking at developments in technology, with the hope of tutors being able to offer card payments as well as parents being able to pay online soon.

Precious time

Going cashless can also save schools hours and money, in a time when budgets are ever stretched.

At Burnt Mill Academy Trust, in Essex, a member of finance staff has been able to move into a new role with the introduction of ParentPay across

all six of its schools.

Finance officer Dawn Warner used to spend ten hours per week manually putting receipts onto the computer system, collecting cash and visiting the bank.

In 2011, however, the Trust went completely cashless.

"Everything is done automatically now," observes Dawn. "Receipts go on the system and money goes into the bank without our input. It means I can now focus my time on other things."

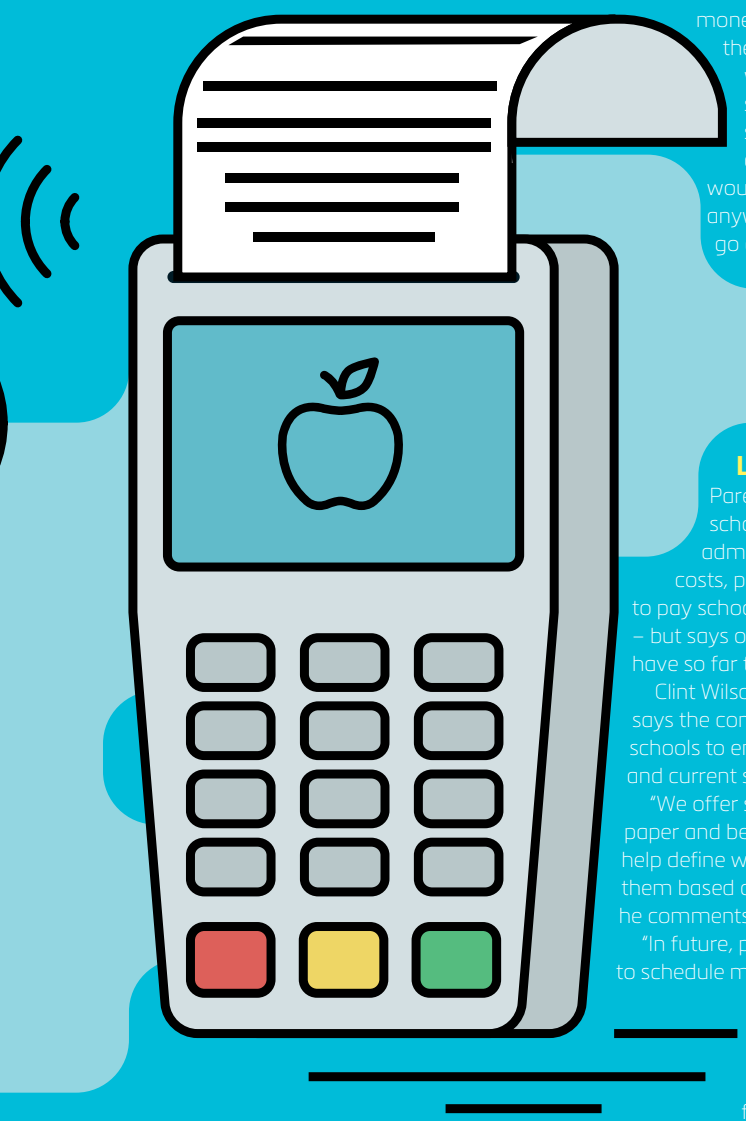
The schools use the ParentPay card system, enabling parents to pay for trips and meals for their children online.

"From a parent's perspective, it's amazing," says Dawn, "You can allocate an amount of money and that's all the child is able to spend; they can eat every day without breaking the bank. The system even enables parents to go online and see what the money has been spent on, which means they can keep an eye on what their child is eating at school. It gives parents more control.

"The system also eradicates bullying. When I was at school, I was from a low income family so had to get a dinner ticket. Our free school meal students have the exact same card as their peers; they no longer stand out.

"It's madness for schools not to go cashless. One of my sons' schools still uses cash and there are always issues with money; every single term there are discussions over who has paid what. The system safeguards the school and parents. For a small outlay – which would be spent on admin anyway – it makes sense to go cashless.

"We have looked at other options, but the card system works for us and is a low cost option."



Learning curves

ParentPay helps 6,000 schools like these to save administration time and costs, plus two million parents to pay schools quickly and securely – but says only 40% of schools have so far taken the plunge.

Clint Wilson, CEO of ParentPay, says the company liaises with schools to ensure the most relevant and current systems are available.

"We offer schools a cashless white paper and best practice checklist to help define what options are best for them based on their needs," he comments.

"In future, parents will be able to schedule meal payments, ensuring school meal payments are on time, and be able to top-up accounts by faster payments and standing orders, cutting out the need to log-in and pay by card on a weekly basis."

ParentPay has also introduced a prepaid debit mastercard, nimbl, for eight to 18-year-olds and a smartphone app to manage pocket money or allowances.

"This enables parents to provide children with a way of learning more about how to spend and save responsibly," says Clint. "it's ParentPay outside the school gates!"

Meanwhile, sQuid offers schools such a level of support with its range of cashless payment options, it sees itself as an extended part of the finance office.

"Ultimately, what sits at the heart of our operation is a regulated system which protects customers' money," explains sQuid's Stephen Hedge. "We process all transactions so don't involve any third parties. It takes away the burden of managing transactions on site. We handle all of the payments to the school, but also any refunds which need to be paid to parents. We feel that's a very important part of the service we offer.

"What we are most proud of is our engagement with schools. They come to us with their requirements and issues and we suggest solutions and give them support all the way through the process. We approach it in a consultative way with a personal approach, with each school having an account manager who monitors the performance for the school.

"We try to become a part of the school's team."

9 REASONS TO GO CASHLESS

+ Increased speed of service reducing queuing times in canteens
+ Increased uptake of free school meals
+ Anonymity can reduce bullying
+ Online payments
+ No need to carry cash, preventing loss/theft
+ Automatic alerts stop students purchasing allergy trigger food
+ Students learn about important lifestyle control by monitoring their own accounts
+ Reporting facilities help decrease wastage and improve the overall efficiency of the meal service
+ Parents are able to monitor spending and eating habits

ParentPay market research found only 40% of schools in England & Wales use cashless online payment system (cashless research 2014/15 carried out by ParentPay, based on 15,000 parents responses and 1,100 schools)

SOMETHING FOR EVERYONE

A subscription to VLeBooks could unlock incredible learning potential for all your students

VLeBooks is the educational and recreational eBook platform from Browns Books for Students, designed for use in schools and colleges worldwide, allowing students 24/7 access to a virtual library. With over 580,000 eBooks available from a wide variety of publishers; librarians, administrators and teachers have the flexibility and freedom to introduce eBook resources into a school or college simply and easily.

With numerous integrated authentication options available and the ability to export OPAC ready MARC records into a library management system, VLeBooks can be integrated with existing library and IT resources.

Some schools are using VLeBooks as an education resource. The availability of textbooks and classroom resources from top educational publishers – including content compatible with the new curriculum – allows relevant and useful textbook and academic resource content to be accessed by students at any time, preparing them for utilising digital resources at a university level. VLeBooks can also be simultaneously used as a lending library for recreational fiction.

Rich resources

With top titles from a huge range of publishers, including Penguin Random House, HarperCollins, Faber and Faber, Bloomsbury, Hachette, and many more, books can be found to suit all reading levels, from early years right through to adult fiction. Integration with Accelerated Reader from Renaissance Learning means that VLeBooks can be used as a platform to help raise reading levels within a school.

The best way, of course, to make the most out of VLeBooks, is to use it for all aspects of e-resource provision throughout the school or college. When used to its maximum potential, VLeBooks can help raise literacy standards and academic achievement with students by ensuring that the resources they need are always available, wherever they are.

Full support and training is included with a subscription to VleBooks; technical support is available from advisors with a background in the educational sector, and there is access to online and on-site training sessions. Browns Books for Students is the UK's leading educational book supplier, with long-standing experience with assisting schools and colleges. This expertise carries over to VLeBooks to ensure that every school or college can make the most of its eBook provision.

Easy access

VLeBooks is easy to use for students – access is available from school computers, home computers and laptops, and even mobile devices and tablets. User experience is concurrent across all devices, with the ability to read online straight away, as long as an internet connection is available.

There is also the option to download any book from the library for offline usage, with free apps available for Android and iOS devices. As all eBooks purchased for use with VLeBooks are hosted and distributed via the platform, this all means that no special hardware or IT resources are required to get going with VLeBooks; it really could not be easier to get started.

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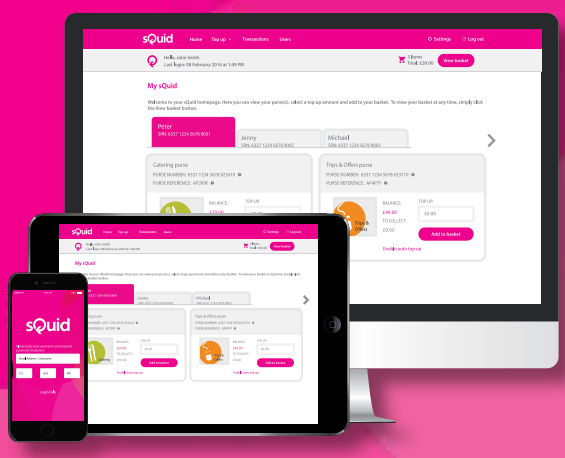

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Q&A HODDER EDUCATION

Marketing director Ceri Jenkins explains how Hodder can support computer science

VISIT: WWW.HODDEREDUCATION.CO.UK/COMPUTING CALL: 01235 827827
EMAIL: EDUCATION@BOOKPOINT.CO.UK

T&I What resources are you able to offer schools for computer science at KS3 and KS4?
CJ Hodder Education is the leading educational publisher for secondary computing. At Key Stage 3, we publish Compute-IT, a suite of print and digital resources for teaching the key strands of the new Programme of Study for Computing. At Key Stage 4, we have just published GCSE Computer Science student books as approved publisher for AQA, and as endorsed titles for the Edexcel and OCR specifications. All our new publications are fully supported with teaching and learning resources from Dynamic Learning.

How do you ensure your titles and supporting materials are as up to date – and curriculum specific – as possible?
The recent changes to the curriculum at Key Stages 3 and 4 have provided an ideal opportunity to support teachers and students with up-to-date resources, fully reflecting the latest programming languages and the growth of computational thinking as a key strand of computing courses at both key stages. In order to provide resources that embody the vision and scope of each of the main new specifications, all our student books are either approved or endorsed by the relevant awarding body or by Computing At School for Key Stage 3.

What's involved in a 'Dynamic Learning package'?
Dynamic Learning is our online subscription service hosting a range of interactive, blended resources to use with whole class, group or individual students. For Key Stage 3 and 4 Computer Science courses, there are teaching and learning resources to create innovative lessons and assess student progress, which can be integrated with a Whiteboard eTextbook version of the print book for whole class teaching. In addition, teachers can use specially commissioned videos to help teach key topics. More information is available at **www.hoddereducation.co.uk/dynamic-learning.**

Are you able to talk teachers through their options, to help them find resources that best fit their students' needs?
Hodder Education has a team of highly experienced sales consultants who are on hand throughout the school year to advise on tailoring resources to suit an individual department's requirements and their budget, as well as to demonstrate how to make best possible use of Dynamic Learning resources for teaching and learning. Appointments can be made through our website or by contacting our head office on 0203 122 6555.

Gratnells

TAKE POWER

Introducing a new storage and charging solution that is already making a big impression...

The latest product releases from Gratnells, the PowerTrolley and PowerTray, have recently been placed into a local school for a six-week trial. The PowerTrolley and 3x PowerTray combination came through the demanding test with flying colours.

The equipment was supplied to Purford Green Primary School in Harlow, Essex, identified by Gratnells as a school with a reputation for excellence. The school is proud of its excellent facilities and light, spacious, well equipped classrooms. With its emphasis on standards, skills, challenge and opportunity it was considered a perfect testing ground.

The challenge

The school has 30 iPads, shared between different classes and year groups. The tablets are extremely popular with the learners and this often requires moving up to 20 devices at a time between different locations in the school. Recharging sometimes takes place in the classroom and each evening all tablets, storage cases and holders, are removed to the security of a lockable storage room.

The test

Score sheets and feedback forms were used to rate the products across six features: Functionality, Mobility, Safety, Security, Storage and Ease of Use. The kit was rated as very good across no fewer than five categories, with Mobility scoring an outstanding maximum mark.

Feedback

Users were impressed with the trolley's ease of movement – particularly for children. This, combined with the unit's stability, safety and even weight distribution, made it a reassuring choice for classroom use. The flexibility of the charging process was also popular – it was found that children could easily access and charge tablets either singly or in groups within trays. Perhaps most important was the ability to use and charge devices where and when required, often dividing the trays between classes and charging while learners were accessing and using tablets.
www.gratnells.com

Conclusion

"The Gratnells PowerTrolley/PowerTray combination will be a real asset to any school, with its manoeuvrability, ease of use, flexibility and safety; we loved it, and we don't want to give it back!"
Ms Keen, project leader and deputy head at Purford Green School

RESPONSIBLE ATTITUDES

Over half of teachers feel they aren't sufficiently trained in online safety, says Mark Anderson – so who should do something about it?

When I was a kid the most you had to worry about when it came to something going wrong with your photos was the 'quality control' sticker you'd get on them when they came back from the chemist. Being a child was simple. It was about the day to day things: your school jumper going missing, coming up with a plausible excuse for your homework not being done, solving the latest Rubik's Cube... Links to the outside world came from only three main sources: the TV, the newspaper or the radio. We were taught about 'stranger danger' but as a preventative measure as opposed to it being a very real threat.

Children today face a very different scene. They live their lives in ways that we adults often find difficult to comprehend. Top of the priority list these days for young people is keeping their Instagram up to date or posting their Snapchats, and failure to keep up with the pace of social media can often result in them feeling as though their whole world is going to come crashing down. Today's teen is bombarded with links to the outside world; they continually face a myriad of choices – many of which, considering their age, some would argue are completely inappropriate.

In the dark?

We live in a world where the existence and genius of technology can not be denied. As parents we are faced with the decision of allowing that technology into our homes. It's really difficult; I know this as a parent myself. Try asking KS2 children what social networks they use or what rated films or games they watch and play. You'll most likely be shocked. It is no small wonder that parents are ill-equipped to support their children at home – and in that case, what hope can we as education professionals have?

In response to this and in writing this article I thought I'd present teachers on Twitter with a question related to their knowledge of online safety. I asked:

"Do you feel as a teacher that you receive sufficient training in school in online safety?"

It was a simple yes or no poll. At more than 500 replies, the vote was pretty much evenly split with 54% saying no and 46% saying yes.

It's concerning, to say the least. As educators, we are not the living embodiment of Google. We do not profess to know everything and in fact part of what we do means we have to regularly update and deepen our own knowledge of what we teach. Is online safety somehow then slipping through that net, as it were? Are we burying our heads in the sand and failing to acknowledge that there is a very real and apparent threat which exists? Is it too easy to consider it the duty of our employer to provide that training for us? How many times have we as educators realised that the children in the room are in fact more knowledgeable than us?

Keep up

As teachers it is important that we encourage our schools to take steps to bring our knowledge up to date, ensuring that both the adults and those in their care are safe online. Protecting professional identity training is just one example of where this is applicable to all those involved.

There are a number of options that are available to help: one particular tool that I have found invaluable over the years has been the South West Grid for Learning's 360° e-safety tool which can be accessed via 360safe.org.uk. This free tool gives your school a framework upon which you can test whether or not your online safety procedures are up to scratch. Once you have completed your audit, it will give you a list of recommendations to help you bring yourself up to a satisfactory level.

Successful online-safety expert Alan McKenzie rightly says that "e-safety is always evolving". It's a world which, as we know, develops all the time. We need to hone our knowledge and skills to allow for this. Alan's site esafety-adviser.com is a great resource for schools to learn about how to work around e-safety, embracing technology whilst enabling all stakeholders to be mindful of and successfully navigate the risks involved.

It is highly recommended that a number of individuals in a school receive specific CEOP ambassador training. This is a hard-hitting day of training around online protection. Teachers who attend this popular course always come away much better equipped to support their schools in ensuring compliance facilitating safety within the school environment.

One popular means of supporting the use of technology in schools is that of the student digital leader scheme – see digitalleaderacademy.com or read my free book at bit.ly/madigitalleaders. A fantastic development of this is the idea of eCadets, devised by Henry and Danielle Platten. The eCadets scheme can be bought into by schools to support online safety. So successful is the scheme that it has been nominated for numerous awards, proving highly popular across the UK. For more information on eCadets, take a look at ecadet.zone.

Whichever way you look at it, the issue of online safety isn't going away; nor is it likely to become anything other than more complex as time goes on. The best advice I can give is to have open conversations about being safe in a digital world, whether your students want to talk about Snapchat or sexting. It's our job to ensure we can meet this duty, not only to help keep our kids safe, but for ourselves too.

+ Check out the fab Digital Sisters at **digitalawarenessuk.com**
+ Look at the great resources from SWGfL **swgfl.org.uk/products-services/esafety**
+ Explore Alan Mackenzie's resources at **esafety-adviser.com/**

ABOUT THE AUTHOR

Mark Anderson is a former assistant head teacher, lead teacher for ICT, a successful head of computing (before it was trendy) and a driving force behind one of the UK's most successful iPad 1:1 initiatives. His book, Perfect ICT (Every) Lesson, is published by Independent Thinking Press.

NO LIMITS

The technology is in its infancy, says Simon Harbridge, but the educational posssibilities of virtual reality are very exciting indeed...

Education has been gradually adopting technologies that first gained mass popularity in the consumer market into everyday classroom life – most notably tablets. So, can we expect virtual reality to be the next technology to transform the way that pupils learn?

With the virtual reality market expected to break the $1bn (£710m) barrier this year, according to Deloitte, and with Goldman Sachs predicting the market could be worth $80bn (£56.8bn) by 2025, the focus is expected to shift away from the traditional gaming industry and into other sectors as the technology gains traction. Most notably, we expect to see greater adoption in the education sector in the coming years.

Going deeper

Virtual reality involves complete immersion in a fully imagined environment. While the technology is still in its infancy and not yet truly immersive, we are starting to see the first wave of commercially available educational products and solutions, offering the potential to transform the classroom, enhancing the way in which students acquire and engage with knowledge. When tailored to the curriculum and a particular area of study, virtual reality enables teachers to truly bring their subject matter to life, allowing students to fully engage in the content and nurture a deep understanding of the subject.

With the ability to create any virtual environment, it's easy to see the potential that the technology has to deliver immersive experiences that are not only entertaining but also educational. As teaching continuously seeks to become more interactive and immersive, virtual reality is often touted as one of the education technology trends to watch.

The potential that the technology has in providing immersive educational experiences begins in primary school classrooms. Working on the widely accepted belief that children learn best by doing or being, virtual reality possesses the ability to maximise learning by letting pupils 'be' or 'do' anything imaginable – without ever having to leave the classroom. According to educational psychologists, we remember 10% of what we read, 20% of what we hear and 90% of what we do. Students are therefore more likely to retain information learned in an immersive environment during a virtual reality experience than in a more traditional lesson or classroom setting.

One particular project leading the way in virtual reality for the classroom is Google Expeditions. The virtual reality

system for education takes students on a virtual journey that would, financially and logistically, be otherwise impossible, incorporating not only faraway destinations but also simulating voyages to extraordinary places like the deep sea or outer space.

A growing number of companies are focusing on providing schools with the content and tools needed to implement virtual reality-based teaching in the classroom. There's already a wide range of experiences available and the possibilities are endless, presenting a real opportunity to create experiences that are not only relevant to the curriculum, but can also transform learning in new and innovative ways. The only limit is imagination when it comes to virtual places from the present, as well as the past, that could be experienced in the coming years. Actually 'being there' could completely transform the way that students learn about the world today and historical events and places.

Careful consideration

There are of course challenges associated with adopting virtual reality technology into education, the most obvious one being cost. In order to take advantage of virtual reality, schools need to invest in high performance PCs in order to provide the best, most seamless experience possible. Together with the additional costs of graphics cards and peripherals such as headsets, the hardware requirements present potential cost barriers to the adoption of virtual reality in schools.

With this in mind, it may be a few years before the technology becomes affordable for schools, and therefore adoption is likely to be gradual. However, we advise any education provider planning to adopt virtual reality in the coming years to look at a five-year, rather than two-year, plan in order to future proof their ICT.

Beyond budget challenges, there are some safety concerns and potential negative side-effects of virtual reality that schools must consider. It might seem surprising that virtual reality would pose any physical risks but some users may experience stress or anxiety after wearing a virtual reality headset for more than a few minutes. Other negative physical side effects can include eyestrain, nausea and motion sickness. Because users strapped into a headset cannot see anything around them, there are also obvious physical dangers. To avoid this, we would recommend that schools limit the time students spend using the headsets and ensure they remain seated and take regular breaks. Some schools have even introduced immersive suites specifically tailored to the safe use of virtual reality technology.

Despite the cost barriers and potential risks, it's easy to see the impact that virtual reality could have on education. As long as the technology is there, increasingly engaging content will be created, which will further aid and enhance learning. Meanwhile, hardware developers must continue to work on the human-machine interface to develop a comfortable viewing experience.

Virtual reality creates the opportunity for students to experience something they wouldn't have been able to before, and learn in an infinitely more engaging environment. As with any innovative educational technology, it does not represent an alternative to teaching but an opportunity for innovative educational methods that can be adopted and led by the teacher in order to best suit the needs of the class. Like all technologies in education, it is important that virtual reality is adopted into education in a way that is centered around how students learn, and that teachers fully understand how to use the technology to its full potential.

3 STEPS TO VIRTUAL SUCCESS

1. Audit the existing curriculum to identify where virtual reality can support and enhance learning.
2. Investigate and evaluate virtual reality platforms, software and apps to meet education objectives.
3. Create a workshop environment to engage and train teachers to better understand the technology and practically embed virtual reality in the curriculum.

ABOUT THE AUTHOR

Simon Harbridge has been the CEO at Stone Group, the provider of ICT solutions and services to education and the public sector, since 2012. Previous to this, he was the finance director, and has been a board member for seven years.

Q&A LITERACY PLANET

Adam McArthur, CEO, introduces an innovative and scientifically proven literacy resource

VISIT: WWW.LITERACYPLANET.COM/TECH CALL: 04973 74773 EMAIL: INFO@LITERACYPLANET.CO.UK

T&I: This is an Australian designed resource – does it fully support the English curriculum?
AM: Yes, LiteracyPlanet is aligned to the National Curriculum and Scotland's Curriculum for Excellence. It is designed to support English literacy teaching from Reception to Year 9 in the UK, and P1 to S3 in Scotland. It comprehensively covers pre-reading, phonics, sight words, reading, spelling, vocabulary, comprehension, grammar and punctuation. While LiteracyPlanet was originally developed for schools in Australia, it is based on methods that are scientifically proven as optimal for learning, and has been customised to support the English curriculum.

Is there evidence that LiteracyPlanet can improve outcomes?
Clinical research has found that using LiteracyPlanet has a significant valid treatment effect in improving outcomes for children with reading difficulties, and shows how it improves outcomes for reading accuracy and fluency in general. In Australia, the schools using LiteracyPlanet achieve on average 5-11% higher than the national averages in the annual national assessment program's literacy tests, which test skills in reading, writing, spelling, grammar and punctuation. We receive constant feedback that LiteracyPlanet makes a positive impact with pupils.

How does it engage students?
LiteracyPlanet combines best practice literacy education with cutting-edge digital game design. It is a learning environment with thousands of online exercises, that is interactive, rewarding, and most of all fun. Pupils create their own customised avatar, receive immediate feedback and encouragement after they complete tasks, earn points they can redeem for special rewards within the program, can play against their classmates and earn a place on global leaderboards. Pupils love it, and it motivates them to do their best.

Is it easy to use, and does it require specific hardware?
Teachers tell us they really appreciate LiteracyPlanet's flexibility and how easy it is to use. It is accessible through any internet connected device, with free companion apps for iOS and Android. It is highly intuitive, and offers both an automated learning path ideal for self-directed and self-paced learning, as well as easy to use management and diagnostic tools. These make it straightforward for teachers to identify learning gaps, personalise and differentiate learning, assign tasks, monitor progress and track results.

Q&A ILLUMINATE DESIGN

Director Robin Shephard-Blandy shares Illuminate Design's vision for your school

VISIT: WWW.ILLUMINATEDESIGN.CO.UK CALL: 01206 709694 EMAIL: INFO@ILLUMINATEDESIGN.CO.UK

T&I: What services can you provide for schools?
RSB: Illuminate Design can provide almost anything a school may need for their productions, assembly halls and events. We pride ourselves on working with our clients to make sure we're recommending the right equipment and services to meet both the needs of the school but also, importantly, the budget!

One of the most important things we also provide is face-to-face training, often on the school's own equipment which gives the teachers and staff the confidence to use the facilities available to them. In addition, we are pleased to be able to give advice on what regular inspections and maintenance needs to be carried out to ensure compliance.

Why is it worth schools investing in the high standard of installation and equipment you provide?
Equipment should just work... so, whether it's a control desk, PA system, or projector, buying the right equipment is important to know that it's going to last and can be relied on. The same can be said for the installation too – our aim is to design and install simple to use, reliable systems to support a variety of events from a single microphone through to a complete theatre system.

Can you advise individual schools on finding the right system for their needs and budget?
Certainly, from our experience working throughout the education sector, we know that it's a fine balancing act finding the right system which meets the budget! In fact, as we are wholly independent, we are able to source the right equipment and offer the correct services which give us the flexibility to design a package to meet you requirements within budget.

Do you also offer post-installation training and/or support for staff?
All our packages come with training to enable your staff to understand how to use the equipment, this can be as a one-off visit or multiple sessions focusing on different areas of the installation as the need dictates. We also regularly design specific training sessions on the school's existing equipment to make sure they're getting the most our of their equipment.

If needed, we can also provide on-site support for preparation for their shows and could even provide a technician to run the systems during the performances taking all the worry away from the staff so they can concentrate on delivering a successful show.

Win/Win

Sure, they'll spice up a dull subject – but computer games in the classroom shouldn't merely be for pacifying your digital natives, says Nicola Whitton

Good games are powerful teaching tools. For over thirty years, educators have used computer games in their classrooms to motivate students and support learning. For many teachers the overriding motivation for using such resources is to encourage students to participate in something they perceive as boring; often using variants of quizzes or tests with rewards to provide extrinsic motivation to support practice and recall. It is certainly true that digital games can do this very well, but this is only the starting point for the potential of computer games in the classroom.

While digital games will motivate some learners simply because they are games (and research shows that this is not all learners, not all types of games, and not all of the time) and they can be a great way to support memorisation, there is a lot more to learning; and computer games have a lot more to offer. There are four key reasons why computer games have the potential to transform learning: they are active; engaging; digital; and playful.

Multiple benefits

First, computer games can create **active** learning environments in which players learn-by-doing from interaction with the game and the other players; they are all about action and interaction, rather than passively watching or listening. Good computer games require discussion, practice, active problem-solving, learning through experience, reflection on actions taken and development of alternative strategies. They provide meaningful challenges in authentic and situated contexts, drawing on collaborative and social learning perspectives.

Second, going beyond the idea that digital games are motivational in and of themselves, there are various mechanics used in games that support ongoing **engagement**. For example, the use of competition, points and rewards, rules and goals. Good computer games are able to provide challenges that are not too easy, nor too difficult, keeping the player in a state of flow, or immersion, with goals that are possible but uncertain, increasing levels as skills develop, and providing a real sense of satisfaction when players ultimately achieve their objectives.

Third, **digital** games also have a range of potential benefits in line with other learning technologies: as interactive systems, they can support learning through gradual steps, guiding players as they acquire greater competence; adapt to the skills and experience of the players; and provide appropriate, timely and meaningful feedback on actions. They can allow players to take part in simulated experiences that would be impractical, expensive, or too dangerous to undertake in real life, and provide simultaneous visual, auditory (and sometimes tactile) outputs, with the potential of these different sensory experiences for learning.

Finally, an often-overlooked potential of computer games in the classroom is that they create safe spaces for **play**, experimentation and, crucially, failure and learning from mistakes. Managing failure and development of resilience and risk management skills are vitally important for young people, but our education system, with an increasing focus on testing and attainment, stigmatises failure instead of seeing it as a vital component in the learning process. In digital games, failure is integral; in fact, any computer game that could be won at a first attempt would be pretty boring for the player. Safe play spaces also stimulate imagination and creativity and develop lateral thinking and problem-solving skills in a pressure-free environment without fear of repercussions in the real world.

Flexible approaches

There is a clear case for the benefits of digital games in learning and teaching, but the approach is not without its drawbacks. Computer games can be expensive to buy, work erratically within the limitations of school systems, provide a poor overlap with curriculum contexts, and be time consuming to test and use in practice. In many cases, these limitations outweigh the benefits of games, and it is not surprising that many teachers are sceptical of their value in the classroom.

However, digital games in the classroom do not simply have to focus on learning by playing games – there are a range of different potential uses, from using games as a stimulus for learning to having students develop their own games (see boxed text for more detail). There is also a trend away from digital games in education to the use of traditional games (such as board or card games) and mixed-reality games, which take place in both the digital and real worlds. These game formats offer many of the advantages of computer games and are easier for teachers to develop for themselves.

Whatever the approach, what is crucial for any form of learning with games is that the activity itself is not seen as the end point, but rather as a starting point for the activities, discussion, and reflection that develop learning from and in the game, and support its consolidation and transfer to other contexts.

GAME ON!

There are lots of different ways in which computer games can be used in the classroom to support, inspire or consolidate learning. For example:

+ Learning with entertainment games
Basing teaching around games originally designed for entertainment, such as commercial-off-the-shelf (COTS) games, apps or mobile games.

+ Learning with educational games
Using games developed with the express purpose of learning in an educational setting, either commercial games for learning or bespoke games created by teachers or as part of development projects.

+ Learning inspired by games
Using games as a context for learning, but not learning about the game directly, for example, using chess as a stimulus for designing algorithms.

+ Learning within games
Exploring the informal learning that happens while games are played for entertainment, for example development of leadership skills in online role-playing games.

+ Learning about games
Examining games as social, political, historical and cultural artefacts.

+ Learning from games
Analysis of the design principles that embedded within games, and consideration of how to apply these principles to learning, for example the use of escalating challenge and rewards.

+ Learning by making games
Developing skills through the process of design, development and creation of games.

ABOUT THE AUTHOR

Nicola Whitton is a professor of education at Manchester Metropolitan University. Her research focuses on the use and potential of digital games and play for learning.

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Q&A

APPS BASED LEARNING

Charles Wiles, CEO and co-founder of Zzish, tells the story of an incredible journey, with an exciting future yet to come

VISIT: WWW.ZZISH.COM **CALL:** 0203 026 0100 **EMAIL:** CHARLES@ZZISH.COM

T&I: Tell us about the team behind Zzish...

CW: Samir Seetal and I founded Zzish in 2013 with a mission to enable anyone to create high quality education apps that have a real impact on student learning. We were both parents and frustrated by the poor quality of education apps out there, particularly for teaching primary and secondary school children. We wanted to enable a tech revolution within the educational sector and empower schools and teachers to realise the real power of education apps in the classroom. I was Google's first product manager hired outside of the United States and helped build the first version of Android; I also have a PhD in Robotics and AI. Samir is an avid entrepreneur with over ten years of technology and consulting experience in various web, mobile and back-end technologies. Along with a passionate team of world class experts, including teachers, designers and developers, we decided to build a revolutionary new platform, Zzish, to finally deliver on the promise of mobile devices in the classroom.

What was the gap in provision you saw that inspired you to develop this platform?

There are 200,000 imaginative, engaging educational apps out there, but far too few are easily usable in the classroom and most fail to fulfil their potential to have a real impact on student learning. This is such as shame as we are failing to exploit the significant benefits that come with using smartphones, tablets and laptops in the classroom. We decided to solve this problem and ensure that any education app can be a really useful tool that teachers want to use every day in class. We do this by allowing developers to plug their education apps into our powerful real-time dashboards and back-end technologies and so help all educational apps rise to the high standards that Zzish aims to deliver.

What, exactly, does Zzish enable schools, teachers and students to do?

Zzish allows access to a plethora of classrooms apps, all plugged into the Zzish teacher dashboards, so that formative student data from multiple apps can all be recorded easily in one place. Zzish makes student logins simple and painless and then processes student data in real-time

Sarah Bronstein, @BMMSbronstein. Texas, USA.

teach SECONDARY TECHNOLOGY +INNOVATION AWARDS RUNNER UP

to give teachers instant, actionable insight into class level and individual student learning gaps. Teachers can then use this insight to personalise and differentiate their teaching immediately in the classroom. One powerful feature of Zzish is that, by displaying real-time data on the electronic whiteboard in a fun and engaging way, it can also turn almost any app into an engaging whole class game that students love. For example, the 'team game' view in Zzish works really well with the Quizalize app to turn dull assessments into a fun classroom quiz game while the dashboard views simultaneously give teachers instant insight on who needs help and what they need help with.

Why have you created Quizalize? How could it help improve teaching and learning?

Quizalize was initially created to showcase the power of Zzish, but it has rapidly become a powerful and popular classroom application in its own right. It's a free and easy-to-use classroom quiz tool that teachers can use to create, share, buy and sell their own quizzes. Quizalize taps into the power of using devices in the classroom to deliver better engagement and smarter learning for students and, thanks to its integration with Zzish, it also provides clear, insightful data for teachers which allows them to provide a personalised learning experience. As well as the growing library of teacher created quizzes, major publishers are creating quizzes in Quizalize too, to support their textbooks and curricula. Quizalize has now become a viral sensation within the teaching world, with over 30,000 teachers signed up in over 100 countries!

How closely do you monitor the apps available through your store?

Zzish is an open platform and we allow anyone to submit apps that they believe will have an impact on student learning. Currently we review all apps and we are also developing a review system for teachers to share their views on how well each app addresses specific areas of the curriculum. We want to showcase the best educational apps out there and create an app store powered by our teacher community. In the mid term our goal is to measure the impact of each app on student achievement against each area of the curriculum so that we can automatically recommend apps that are proven to have the biggest impact in each area. We always do a great deal of quality assurance to ensure all apps are suitable for and effective in the classroom.

What are your plans over the next couple of years?

Zzish is constantly evolving, as we ensure our platform is the best it can be for students, teachers and developers alike. For developers our goal is to create a unified platform to help them create and deliver high quality education apps. We want to save them time and money and also put them in front of a large teaching community that can fairly judge each app on its own merits. Our target is to provide a level playing field for developers large and small, so that the best and most effective apps rise to the top regardless of their marketing budgets. For teachers and students, the aim is to put the power of Zzish in as many classrooms across the world as possible; so teachers can finally unlock the tremendous potential in educational technology in the classroom.

Positive impact

Young people's mental health is more fragile than ever, it seems – and technology is a contributing factor. But could it also offer solutions? Sal McKeown investigates...

One of the most frightening statistics to come out of Mental Health Week in May was that anxiety, depression, self-harm and eating disorders, the four most common mental health issues faced by teenagers, have risen by 600% in the UK over the past ten years.

Many experts lay the blame on social media with its emphasis on selfies and image, the relentless drive to appear as a popular party animal and the temptation to reveal innermost thoughts to total strangers. However, former mental health champion Natasha Devon sees that technology has a crucial role for many young people. "Not every young person has the confidence to articulate themselves verbally, and feel safer opening up online or by text," she explains.

Self help

Many of the apps available in this area are aimed at health rather than education but the most useful for secondary age pupils are the new Innovation Labs apps – see box out, right – and My Journey, an app from the Google Play store. This app for young people with psychosis has a self-help tool to allow the user to rate their mood and get tips on improving their wellbeing. It includes information on prescribed medication, appointment and medication reminders and contact details for further advice and support, including contacts for emergency services (www.sabp.nhs.uk/eiip/app).

The advantage of apps is that they are downloaded to a mobile phone and so can be to hand day and night. Young people say they are more honest online than face to face and value the anonymity of apps because there is no trail to show which sites they have visited.

Some schools are in the business of making rather than using apps. Six girls from Stratford Girls' Grammar School have reached the final of the 2016 Apps for Good competition with their app Lilies. By the age of 16, one child in 30 has lost a close family member. Lilies offers advice, contacts, peer support forums and a memory wall for personal use or for public sharing. Many apps provide access to expert advice but the 'comfort of strangers' found in forums may be even more welcome to those who find themselves in a very dark place.

Hidden treasures

Sometimes young people need help to be part of a group. TRACKS in Bradford is a KS4 unit for anxious and vulnerable young people which acts as a bridge between home tuition and mainstream further education colleges or employment and training. The school wanted to find a way of building maths skills and social confidence so they called in a consultant James Langley (@lordlangley73 on Twitter) to run a geocaching project and motivate the students to practise quick fire mental calculations.

Geocaching is a treasure hunt with

technology. The idea is to hide containers, called geocaches and then send out teams armed with GPS devices to track them down.

With technology, students often stand or sit side by side which is less intimidating than facing people and making eye contact. There is the increasing excitement as they pick up the cache signal and realise that they are getting closer and then there is the race against time to find and to complete all the hidden tasks.

"Many of our young people have been out of education for two or more years, sitting in their homes unable to interact with their peers or the world," comments acting head Sue Sutcliffe. "This activity took 11 of them out into the woods on a common quest and let them socialise in different contexts and form new friendship groups and work together."

Another advantage of a project like this is that students are exercising in fresh air, which can lift their mood. Geocaching is an ideal activity for those learners who are easily distracted and those who find it uncomfortable to sit in a classroom for any length of time.

Create and control

Other schools set out to help young people find their passion through technology, whether that be sport, art, music or drama. The thinking is that if young people have a creative outlet, something which lets them exorcise difficult emotions, they are less likely to vent their feelings in more harmful ways.

Art on a computer or mobile phones is a popular choice. Apps and programs generally behave consistently which gives a feeling of control. Students don't need to start with a blank canvas; they can choose an image or a piece of artwork, edit and personalise it. The results look professional and is very motivating for young people with short concentration spans or co-ordination difficulties due to drugs or their condition.

Ross Wallis is currently head of the arts faculty at Sidcot School but has worked with school refusers and children who cannot cope in mainstream. "Playing with images, creating animations, filming and gaming can be just that - playful, and fun and creative," he observes. He is a great fan of using the camera on mobile phones with apps to produce photomontages, slide shows and, blogs which can act as portfolio of a student's work.

"A screen does suck people in and they can become addicted, but these very traits can be put to good use," insists Ross. "My aim is that all my students should want to create, not for me, but for themselves – and computers can play a really positive role in helping that to happen."

SOURCES OF SUPPORT

Innovation Labs has funded partnerships between young people, designers and mental health organisations to create seven apps and websites to improve young people's mental health:

+ Doc Ready
Helps young people feel more confident when they see their GP about a mental health issue: **www.docready.org**
+ Find Get Give
Helps young people find mental health support in their area: **www.findgetgive.com**
+ Madly in Love
Relationship and mental health advice for young people and their partners: w**ww.madlyinlove.org.uk**
+ Mood Bug
Lets users share how they feel with close friends: **www.moodbug.me**
+ Well informed
For those who support children and young people: **www.wellinformed.org.uk**
+ In Hand
Tools, advice and activities for young people when their mental health is at risk: **www.inhand.org.uk**
+ Head Meds
Information in an easy to follow format on young people's mental health medication: **www.headmeds.org.uk**

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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THE BIG SCREEN

At New Hall School in Chelmsford, Essex, keeping at the cutting edge of technology is always part of the plan...

Founded in 1962, New Hall School has over 1,200 students between the ages 11-18. It won the National Independent Schools Award 2011 for Outstanding Strategic Initiative, in recognition of its exceptional success in doubling the school roll and raising standards of academic and co-curricular achievements. The school was also named in the Top 50 Independent Co-ed Boarding Schools in 2014. It had rolled out over 20 77" Hitachi interactive whiteboards throughout its classrooms – but the units had become outdated and newer technology was readily available. When it came to replacing the units the availability of similar sized screens was limited and the school didn't want to compromise on size because of cost.

The school wanted an all-encompassing learning environment where students could continue to interact with teaching materials, just as they had been doing. Staff were particularly concerned about software compatibility and keen to stress the importance of ensuring none of the students' work was lost when the two products were swapped over. New Hall School worked closely with CDEC to ensure that the new solution met all requirements, as well as the work being completed within the six-week summer holidays.

The solution

CDEC has worked with New Hall School for over ten years and so the company was well aware that the school prides itself on being at the forefront of learning technology. For its most recent classroom AV refresh, therefore, CDEC introduced New Hall to BenQ's RP790 interactive flat panel, the first 79" display available to the UK market. Packaged with SMART Notebook and compatible with Windows, Mac, Linux and Chrome, the 4K screens would allow the staff to continue to use all of their existing teaching materials by simply transferring them over, as well as providing brand new, rich functionality.

In the classrooms reliable, easy-to-use, cost-effective display solutions were required, which needed to be simultaneously cutting edge and durable. BenQ's touch-screens ticked all the boxes – moreover, the BenQ team is proactive, competent and supportive.

It took three engineers eight days to complete the 21 unit install, including accepting delivery on site and completing tests of all units. After seeing the screen at BETT and having a demonstration unit on site for a week's trial the school were very happy with the picture and build quality of the screen. Pricing was very competitive, so 21 screens were ordered, which were then installed within the given time frame.

The benefits

The introduction of the new RP790 screens into the classrooms has meant that teachers have increased their effectiveness by engaging the students in the overall learning experience. With its 10-point multi-touch support and impressive 4K resolution the staff can easily encourage group participation and effectively translate their ideas to the classroom with the highest image clarity.

As well as being the first of its kind, its progressive technology is designed to ensure the screen is flicker-free at all brightness levels. It also comes with features such as total eye-care, designed to safeguard the eye health of students and teachers. The built-in android system offers a stand alone experience and has the ability to intelligently update itself with the latest upgrades to make it a truly future proof experience.

"The feedback has been brilliant and the displays bring a whole new energy to the classroom. The interactive flat panels add a completely different dimension and pupils really like the crispness and dynamism. We use them as a 'normal' whiteboard, to display internet content, play video and really draw the pupils into our lessons. CDEC did a fantastic job as usual, which is why we continue to use them as our preferred AV reseller and installer."
Kevin Bassett, IT manager at New Hall

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THE WONDER YEARS

The true joy of science comes from being inquisitive, says Peter Scutt – and hands-on classroom activities keep curiosity alive

Science is about curiosity and opening the minds of children to how things work and why things are the way they are. As Albert Einstein is quoted as saying, "The important thing is never to stop questioning".

I am always excited to see students being stimulated by a demonstration and creatively thinking of ways to explain it. For some students though, this may seem a daunting prospect as they just want to know the answer. For many, this can be something which is outside of their comfort zone and so they need to feel supported and safe.

But the true joy of science comes from being inquisitive and the process of investigating and problem solving. The teaching of science should, therefore, support students and provide them with the tools to make it challenging, imaginative and hands on. By doing so, it not only benefits their academic achievement but also builds their character and the key traits of resilience and determination in a happy, stimulating and safe environment.

Making it matter

During my career, I have experienced more and more students that lack interest in science as they progress through secondary school. This may be a result of the 'fun' experiments and hands-on experiences being replaced with the teaching of theory instead. The question is, how can the enthusiasm and excitement around science be maintained?

A typical response we hear from students studying science is, "Why do we need to know about this?" If the relevance of what we teach is not clear, then it becomes less attractive to students and motivation drops.

As teachers, we are governed by what we need to teach and it can be very difficult to form a connection with the lives of the children we teach. It is vital though, that children see the relevance to the real world and this is linked to more memorable hands-on experiences rather than a theory based approach.

Forming a connection between animal

TRULY INSPIRATIONAL IDEAS TO HELP CHILDREN SHINE

The Let Teachers SHINE competition is run by the education charity SHINE (Support and Help in Education) and supported by Capita SIMS. Now in its fifth year, it provides teachers across England with the chance of winning a grant of up to £15,000 for their innovative idea to raise the achievement of disadvantaged children in science, maths or English.

For more information about entering the competition and details of this year's winners, please visit www.capita-sims.co.uk/shine-8

adaptations and developments in science can make science have a purpose, for example, between the woodpecker and the design of new crash helmets and between butterflies and nanoparticle technology. It opens up the study of science so students can see the relevance in the world.

Bring them in

Likewise, making the lesson more engaging helps too. Nuclear Fission, the process where atomic nuclei are split to release energy, is one concept which many students struggle with. Students find modelling the process with skittles and chocolate brownies, or a set of mouse traps and ping pong balls, makes the process more understandable and accessible.

A simple lesson starter of a flying tea bag, a circle of candles or looking at the circuit board from a computer can engage students with heat transfers. One battery, one bulb and one wire can get students thinking about electrical circuits. These experiments often do not take long to set up, but certainly help cement learning. In addition, demonstrating respect for all learners by understanding, responding to and supporting their differences in learning styles and attitudes to learning, can help to establish effective working relationships and rapports that can foster students' confidence and self-esteem which can have an impact beyond the science class.

> If the relevance of what we teach is not clear, then it becomes less attractive to students and motivation drops

Light the fire

Students should leave a science class feeling inspired and talking about what they have learnt. It is a great feeling when a parent comes up to you to tell you that their child came home and they were really excited about what they had learnt in science. Science has the ability to stimulate minds and to provide a hands-on approach to learning that promotes thinking and encourages students to strive for answers and spark their interests.

From my experience of working with teachers from different schools, it is clear that inspirational science teachers are at the heart of a successful department. Teachers who have enthusiasm and passion for their subject and who come up with innovative ways of teaching and using real-life examples to show how science links to the real world, give a vibrancy and energy in the classroom.

Teachers should also constantly review the learning that is happening in their classrooms and look for new ways to enhance the learning further. Outside of the classroom, engagement in science is enhanced by students being actively encouraged to take part in extra-curricular enrichment activities, such as Science Club, STEM clubs, Eco-School and other competitions that support as well as strengthen their understanding of the importance of science.

I have put some of these guidelines into my teaching practice and plan to share some of my ideas with teaching colleagues. Following a successful application in the Let Teachers' SHINE competition, I have been awarded a grant of £15,000 to further develop an 'Achieve in Science' project. This will offer a free-to-access website providing assessment tools, revision resources and videos to support teachers, schools and parents teaching science. Through this project, I am hoping teachers will be able to more easily support students of differing abilities and from different backgrounds, to inspire confident learners who will have the skills, qualities and qualifications to thrive in our changing world.

ABOUT THE AUTHOR

Peter Scutt (@scuttscience) is the science lead practitioner at Isambard Community School, an 11-16 secondary school based in Swindon, Wiltshire. More information about his award-winning project can be found at www.AchieveinScience.com

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Q&A THE STEM FESTIVAL

If you've never considered turning to Ebuyer for specialist support for the education sector, it might be time to think again, says Amber Smith

VISIT: WWW.EBUYER.COM CALL: 01430433783 EMAIL: STEM@EBUYER.COM

T&I: What does Ebuyer have to offer the education sector specifically?
AS: As an online retailer we are generally known as a box shifter, therefore we are not as well known in the education sector. However, and this may be a surprise to some, we do have a designated education department here at Ebuyer Business, where we have a team of experts who offer advice and support to both schools and the government sector. Whether they need help with the products or services themselves, or pricing, we are on hand providing tailored education costings and specialist products that may not be on the website.

Tell us about the STEM Festival – what does it involve, and why was it first established?
The STEM festival is a great way to get the teachers and children involved in technology, which is a brilliant tool for encouraging the mantra that learning can be fun! There are many different apps and learning platforms that can be used for both the teacher and students. Teachers often do not realise that there are many different ways to incorporate technology into the curriculum until they have experienced a STEM festival.

Does it matter what kinds of devices a school is using?
When we go into the schools we use Microsoft devices. The festivals are sponsored by Microsoft but we feel that the Microsoft tablets are an excellent choice due to the fact the majority of schools have Microsoft desktops and laptops, so are already familar to the staff and children which also provides continuity throughout the learning process. Another great advantage of using Microsoft devices is that most companies are opting for Windows operating systems, so the fact that schools are using this OS too sets up the children for a great start in their careers and adult life.

As well as engaging pupils, are there opportunities for teachers to benefit, too?
The teachers that we have so far spoken to after having experienced a STEM Festival have given us very positive

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feedback in terms of what they personally got out of the day. Schools aren't always aware of some of the apps and learning platforms that are widely available for them to use, or how they can benefit them and the children, and STEM enables them to use new material and teach using interactive methods. The main aim of the STEM festival is to show teachers what they can use and how they can best incorporate the apps and the tablets. For example, we do a bridge building exercise where we encourage the teachers to bring it into a maths lesson, so that each Lego brick that students use has a price, and they have to see what the total cost of the bridge that they have built would be.

What kind of feedback are you getting from schools that have already hosted a workshop?
We have visited over 60 schools so far and we have had very positive feedback. The main feedback that we have had is that the festivals have opened teachers' eyes

to what else is available in addition to the textbooks that they use already. They have also said that they have found the devices we've taken and used very easy to get the hang of, which has in turn, helped them feel more confident in using the technology in their lessons.

How can schools find out more?
If schools are interested and want to find out more they can visit our specialised STEM festival landing page: **www.ebuyer.com/STEM** . They can also give us a call on 01430433783 and speak to Rob who attends all the STEM festivals, or if they would prefer to email us they can send an email across with the school name and details to stem@ebuyer.com.

Security Matters

A mobile devices strategy that doesn't consider safe storage and charging is simply not fit for purpose, says Denise Crouch

If you are thinking of introducing multiple devices into the classroom, the hardest part must be choosing between the array of options available to you such as laptops, iPads, Android tablets, Chromebooks or Microsoft Surface; once you've done that, buying a trolley or cabinet to keep your gadgets safe and charged is simple, right? Well, no. Because over the last three years, numerous charging solutions have flooded into the marketplace, meaning that working out which will meet your needs and offer true value for money can be a real headache. Schools often take the easy option and buy the cheapest; but as we all know, that's not always the wisest decision. So, before you rush off and make that mistake, here are a few points to consider:

Firstly, think about how your students will use the devices. Do you need to share them from one classroom to another? Will the devices need to be taken outdoors? How will you keep them secure when not in use? Are students going to bring in their own devices or would loaning out laptops or tablets be better suited to your learners?

Give some thought to your ICT technician: how will they manage updates and downloads to these devices? Will tablets need to be synchronised or do you need to add data transfer capability to network laptops?

All the options

There is a wide variety of solutions being offered from mobile trolleys and fixed

wall cabinets to desk cabinets and small charging hubs. Most provide storage and charging for a range of devices and can cater for up to 60 of them. For loaning out devices or loaning individual charging bays there is a range of intelligent lockers that can be integrated with your library management system to loan the device in a similar way to a library book. This solution can work really well in a library and with very little interaction from the staff; students can borrow a device for a short period of time.

Once you have decided upon your preferred option, be it mobile or fixed, you obviously need to set a budget. When making a decision upon spend, consider the product's life cycle and longevity; do you really want to buy cheap and then spend again in a year's time or is it better to choose a solution that can be upgraded as your needs change i.e. as you refresh your devices?

Here are just a few important questions to help make your decision to buy a charging solution easier:

1 Does the laptop/tablet charging solution meet all of the British health nad safety electrical standards and also meet HSE safety guidelines?

2 Has the solution been tested for compliance by an independent body in the UK? Is it CE certified (some trolley manufacturers self-certify)?

3 Does it have safe power management as standard? Some trolleys have this as an option; safety should be mandatory.

4 Does the laptop/tablet trolley come with load protection (also known as 'soft-start' protection) as standard, to ensure that it does not trip circuit breakers when it is fully loaded?

5 Does the laptop/tablet trolley have surge protection, to ensure laptops aren't damaged by any sudden fluctuations in electricity?

6 If using a data transfer function is there additional cooling provided with the unit to prevent overheating?

7 Is there fully integrated charging? This means the solution will have in-built charging leads made to match your specific make and model of device so there is no need for AC adaptors. Some integrated charging also shuts down the power after devices become fully charged to save energy and reduce carbon footprint.

8 Do you need to accommodate several different devices in one trolley or cabinet, or will students bring their own? If so, then choose a solution with easy cable management and one where AC adaptor store safely out of the way of students. Some trolleys allow you to 'mix and match' devices in one trolley or cabinet.

9 Will the trolley charge all devices simultaneously and do so in the fastest possible time? Some solutions use 'round robin' charging which only charges a few gadgets at a time or it limits the amount of charge to each device before moving on to the next.

10 If you are choosing a solution for tablets such as iPads, will the trolley accommodate them in their protective cases? Is there provision to protect devices from damage whilst they are stored on the shelves inside the unit, such as 'grippy' foam that will prevent screens from being scratched? Any foam casing that holds an iPad in place during charging should be as snug as possible, without large gaps that could mean that the iPad moves around a lot during transport.

11 How secure is the unit? Ideally, you should choose a solution that comes fully assembled and is made of a fully welded steel chassis with no weak points such as plastic mouldings, or wooden panels or doors. Some come with enhanced security features such as built-in alarm, twin locking doors, high security keys and anti-drill locks. Additional features can include reinforced steel as well as anti-jemmy plates at risk points, to help combat against opportunist theft. Security loops to chain the trolley to the floor can give extra protection or choose a trolley with a docking station.

12 Does the laptop/tablet trolley have separate keys to unlock the front and back doors, for enhanced security and student safety?

13 What are the extra? Most trolleys come with various additional features, ranging from built-in 7 day timers, built in printers, network connectivity and data transfer.

Remember, you can spend a lot of time choosing the right devices for your school or college. So it's worth taking just a bit more to decide on how to keep them safe, secure and fully charged.

ABOUT THE AUTHOR

Denise Crouch is head of sales and marketing at LapSafe @LapSafe www.lapsafe.com.

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Q&A

DEVICES SECURITY

Denise Crouch, head of sales and marketing at LapSafe Products, offers some valuable advice for any school using mobile technology

VISIT: WWW.LAPSAFE.COM CALL: 0800 130 3456 EMAIL: SALES@LAPSAFE.COM

T&I: In your experience, do most schools pay enough attention to secure storage and charging for mobile devices?
DC: Having worked in the industry for over sixteen years, I am still surprised at just how many schools forget to think about how they are going to store and charge their devices. They often purchase a class set of laptops, tablets or similar devices from their reseller and it is only when they are delivered they realise that they have forgotten to order a trolley or cabinet to keep them safe when not in use. This can easily lead to a panic purchase and quite often the school will just go for the cheapest solution without thinking about the functionality of the trolley/cabinet, its longevity or indeed security.

The cost of purchasing laptops and tablets has come down considerably over the years but it is still important for schools to think about keeping them safe when not in use. When devices are stolen it leads to disruption of learning and the laptop/tablet theft causes significant inconvenience for both teachers and pupils. Although insurers may replace stolen ICT, sourcing quotations and waiting for new equipment can take a long time, meaning that pupils could be without their devices for a lengthy period. Thieves often strike the same place more than once, as they wait until the ICT equipment has been replaced and attack again. Schools also have an obligation to ensure that personal data does not get into the wrong hands.

Why are your products so suitable for the education sector?
LapSafe® is the original innovator of laptop storage and charging trolleys and has been manufacturing for nearly twenty years. The laptop storage and charging trolley was specifically designed for the education sector to provide safe power management and secure storage for class sets of devices. As technology has changed over the years, LapSafe® has stayed abreast of these changes, providing not just charging but power saving options, data transfer, synchronisation and importantly upgradability. Our products are designed to offer schools flexibility and are built to last and withstand the test of time. All LapSafe® trolleys and cabinets are made from steel, with ranges that offer anti-jemmy plates, piano style hinges, high-security locks and build in alarms. There are also security docking plates that secure trolleys to the wall or security loops provided to chain them to a fixed location.

How can they positively affect teaching and learning?
Most students are more stimulated and attuned to learning when they can interact with hands-on learning tools such as laptops and tablets. The use of videos and apps can help with research, understanding and a way to cement the lesson, so technology has an important place in the classroom. Management of devices, i.e. charging, updating, download/uploading of data and syncing of devices needs to be unobtrusive and simple and easy to manage. We aim to offer teachers more time to teach and less time to manage their devices.

What guarantees can you offer regarding safety?
Our company name and ethos is born from providing schools with a safe environment in which to use laptops and other such devices, hence LapSafe®. All our products meet or exceed all required safety standards, HSE guidelines and have always been independently CE Certified. User safety is our number one priority, and our patented power management system which uses our own low voltage charging cables is built in to some of our products, which means in some cases, there is no need for the use of AC adaptors. In our trolleys where AC adaptors are used, no power goes to the trolley until the doors are shut ensuring that students do not access 240 volts.

Why was the new Indigo range developed? What makes it special?
As with all our products, this range was developed to meet the demands of our customers. We talked to and listen to our existing customers and obtained feedback from the market place. The new range sports a new indigo colour scheme, with aluminium look trim panels and secure aluminium shutter doors. An in-house developed, secure locking system keeps devices safe and out of harm's way.

But what makes it special? That has to be its innovative spacing saving design. The new indigowall provides ultra slim storage utilising our new modular design. At only 210mm slim, this is one of the most space effective ways to store, charge and/or s ync your devices. Suitable for use in locations such as classrooms, corridors, staff rooms and IT suites, the indigowall provides a perfect solution for agile working and teaching.

Are you able to work with individual schools to provide bespoke solutions?
As well as an extensive range of charging trolleys and self-service charging lockers, we have our own in-house development team who can provide bespoke power management solutions tailored to suit.

A new leaf

Whether they are turning pages or swiping screens, we should support and celebrate the ways young people choose to read, says Irene Picton

The positive impact of reading for enjoyment on young people's learning and future career opportunities has long been evidenced in international and national research. Equally, young people's comfort with, and familiarity around, technology is well recognised. Access to, and ownership of, electronic devices such as smartphones and tablets is now widespread across all social backgrounds. In 2015, three quarters (75%) of children aged between five and 15 had a tablet in their home and 69% of 12 to 15 year-olds own a smartphone. So how can we harness the use of technology to benefit literacy?

The eight to 18-year-olds who took part in the National Literacy Trust's annual literacy survey reported reading more on electronic devices than in print form for the first time in 2012, confirming the central role of technology in young people's literacy lives. However, while much of young people's screen time is spent socialising, watching videos or playing games (or watching videos of other people playing games!) access to portable electronic devices also provides them with the opportunity to read ebooks.

Given this preference, should schools be offering ebooks, as well as print books, to pupils? To date, published research on the impact of ebooks on young people's reading motivation and skills shows little international consensus. However, a recent study by the National Literacy Trust evaluating the impact of an ebooks platform on pupils' reading skills and motivation found that access to ebooks had a positive impact on pupils' reading, in particular for boys that began the study with the very lowest levels of reading enjoyment.

The pleasure principle

Data gathered across more than 40 schools across the UK showed that reading using technology could be a particularly powerful tool in relation to increasing boys' reading motivation. Over an average project period of just over four months, boys' reading levels increased by an average of 8.4 months (girls made an average gain of 7.2 months). Attitudinal changes were also more pronounced for boys – twice as many felt reading was cool at the end of the project and the percentage that felt reading was difficult almost halved. For boys that began with the lowest levels of reading enjoyment, not only did the percentage who enjoyed reading on screen increase, but also the percentage who enjoyed reading on paper. In fact, this increased fourfold over the course of the project, suggesting that the opportunity to read ebooks may have opened up a wider world of reading for some pupils. Findings also suggest that reading using technology may be 'another tool in the box' for schools keen to encourage all children to read for enjoyment, but particularly those children that do not enjoy reading in paper form.

There are some compelling case studies showing that ebooks have been used successfully to encourage reluctant readers, regardless of gender, to give reading a try. Teachers and librarians have hailed the benefits both for less confident readers – one pupil, reading a Hi-Lo title, mentioned "No-one could see what I was reading" as a positive – and voracious readers, who may have already worked their way through the school's print library. However, it is important to keep expectations realistic – a screen can't, in itself, transform a reluctant reader into a bookworm overnight, and a significant percentage of young people prefer to read on paper, or don't mind either way. A common attitude, expressed by pupils, is: "I like reading using paper because it feels more like 'proper reading' but using an electronic device is convenient and easy."

Easy does it

Convenience is important – young people spend a lot of time on their devices outside school and it can be no bad thing to offer them the opportunity to read on them. Many school-oriented ebook platforms may be accessed both on and offline, via an app, allowing children to 'borrow' from the school's digital library and read anywhere, anytime. Some school librarians also noted some unexpected benefits to including some ebooks in the library. For example, in schools with limited space, ebooks allow the library to expand beyond its physical shelf capacity; they also remove the need to chase up returns of 'hard copies' of books – an ebook's loan period ends automatically – and digital titles don't suffer from physical wear and tear. More importantly, by 'renting' ebooks for short periods, for example over a term or two, librarians can plan future rentals to reflect recent popularity; helping them to spend their budget more efficiently and creating an evermore bespoke library to suit the needs and preferences of their pupils.

For schools considering putting together a new digital library offering, it is important to research providers thoroughly, and remember that wifi, hardware, staff capacity and technical confidence will all be factors contributing to its success. It is also essential to involve pupils in the choice of ebook. As with print books, having a choice in what you read is a powerful motivator for children of all ages, and we are fortunate that a wide choice of popular titles are now available in digital format.

> "Young people spend a lot of time on their devices outside school and it can be no bad thing to offer them the opportunity to read on them..."

ABOUT THE AUTHOR

Irene Picton joined the National Literacy Trust in 2004 from a background creating events encouraging new audiences into reading. As a Project Manager with the Young Readers Programme, she has since managed literacy projects reaching tens of thousands of children and families across the UK. Irene has a keen professional interest in using technology to engage children in reading for enjoyment, and recently managed a UK-wide research study exploring the impact of ebooks on children's reading skills and motivation.

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CREATIVE CPD

Because great teachers are learners, too...

TAKE CONTROL

Ash Merchant explains why clever edtech and targeted training is the ideal combination for empowering teachers.

In the classroom, technology can encompass all kinds of tools from the use of slick presentation software, or high-tech tablets, online collaboration and conferencing tools, and more. The newest developments allow us to try things in physical and virtual classrooms that were not possible before – but focused CPD is integral to edtech effectiveness; ultimately we must fuse any learning technology with teaching to make it transformational.

By working closely with IT solutions providers to ensure pre-implementation training and support for educators, you will ensure that any new equipment is utilised to its full potential and staff are empowered with the knowledge and confidence to incorporate it into their practice. For example:

Online collaboration tools

Online platforms such as Yammer allow for students and teachers to share documents online, edit them in real time, access them from any device and project them on any screen or device. This not only gives students a collaborative platform in which to brainstorm ideas and document their work using text and images, but it reduces the amount of papers and projects a teacher might need to manage, while allowing them access to student work when and where they need to.

Mobile devices

Creating a more innovative and engaging teaching environment is not just about moving lessons from traditional technology like whiteboards (or even books) to screens, but about enhancing learning experience and making teaching more efficient.

Mobile technology like tablets or 2-in-1 hybrid devices are ideally suited for the classroom due to their versatility. Devices like the Fujitsu R726 hybrid device can be linked to any computer, projectors and the cloud. This allows instant access to course work and material and mobile capability means educators can use these devices on the go, while moving around the classroom or off-site.

Course management tools

Solutions such as Asorb LMS, .LRN, and Articulate allow teachers to organise all the resources students need for a class, providing valuable grading tools and creating spaces for discussion, document sharing, video and audio commentary.

Lecture-capture tools

Lecture-capture tools like Echo360 allow educators to record lectures directly from their computer, without elaborate or additional classroom equipment. Studies show that posting recorded lectures does not diminish attendance and students really appreciate the opportunity to review lectures at their own pace.

Ash Merchant is Education Director at Fujitsu.

58%

of teachers who deliver ICT as a subject say they do not receive regular, specialist training and CPD

Source: NASUWT

ON PAPER

Using digital tools can be a double-edged sword. At their best, they can generate curiosity and interest in the learning; but there is always the risk that they might make the lesson overcomplicated and gimmicky. It's important to trust your professional judgement. As a hook for learning, digital tools can be effective in a way that pen and paper can't, but I also think that paper can be simply magical too. The very best teachers are able to blend analogue and digital tools to suit the needs of their learners, although the confidence to exploit IT has to be learnt over time.

Don't be wary of the learning process, either: by learning and developing your skills you are role modelling being an active learner to your class – you are being precisely the thing that you want them to be.

You are an awesome teacher, in fact, who will have all kinds of exciting impact in your classroom by giving both old and new technologies a go.

Extract taken from Teacher Geek, by Rachel Jones (Crown House) ©Rachel Jones 2015

FLYING HIGH

Working with industry to test their skills has given students at Avon Valley College new insight into the real world of STEM

A group of Wiltshire secondary school students have been working with a global company to complete a technological challenge to create rather special gliders. The Avon Valley College (AVC) students were just some of those from schools across the south who were given the chance to pit their engineering and technology skills against one another in an inter-schools challenge created by leading technology and security company QinetiQ.

Listed on the London Stock Exchange, QinetiQ is a leading science and engineering company operating primarily in the defence, security and aerospace markets. In the UK, the company provides test, evaluation and training support services to the UK Ministry of Defence (MOD), employing 2000 employees at over 20 sites, and it is responsible for over 750 MOD projects. In fact QinetiQ is the UK's largest research and technology organisation.

The challenge took place at Boscombe Down, the aircraft testing site at Amesbury, Wiltshire, run and managed by QinetiQ – which was created as part of the breakup of the Defence Evaluation and Research

Agency in 2001. Appropriately perhaps given the nature of Boscombe Down, the students were tasked to study and then construct an ornithopter – flapping wing gliders like the one designed by Leonardo da Vinci.

Throughout the year the five, Year 7 AVC students who made up the team worked with two aviation engineers from QinetiQ on the challenge. Student team members Jasmine Edwards, Rosie Read, Sarah-Jane Tyrrell, Tom Hallam and Jonny Moncrieff were also supported by Gemma Doré, a test pilot trainer who has flown with British astronaut, Tim Peake.

Commitment and curiosity

The team's commitment to the challenge underlines the importance the secondary school attaches to STEM learning. As AVC's principal, Tim Webber explains, "Science fires pupils' curiosity about the world around them and offers chances to find explanations. The subject engages learners at many levels, linking direct practical experience with scientific ideas. These sorts of learning experiences help students learn how knowledge and understanding in science are rooted in evidence.

"They discover how scientific ideas contribute to technological change – affecting industry, business and medicine and improving quality of life. They trace the development of science worldwide and recognise its cultural significance. They learn to question and discuss issues that

may affect their own lives, the directions of societies and the future of the world."

"Over the term of making and analysing the project we did lots of trial and error to put together the ornithopter without using instructions, " says Year 7 student, Jasmine Edwards. "We had to work out how to use 2D design, how to accurately measure, how to present ideas to others, how to relate to real planes and helicopters to the ornithopter and most importantly how to work and co-operate as a team. My favourite part of the project would have to be working on the 2D design and competing at Quantico in Boscombe Down. I enjoyed working on the 2D design because I love designing things that are original and unique."

"The team worked really well," observes technology teacher Simon Ross. "Their collaboration was positively commented upon by the QinetiQ competition judges."

A taste of success

Having built the ornithopter, the team proceeded to test it and once again the five were praised for their teamwork. "Our team again worked together producing a flying ornithopter, to cries of 'It flies...it flies!'" recalls Mr Ross, with pride. Although the AVC students won the first challenge with longest flight time, they failed to win the distance challenge. "That's for next time," says Mr Ross philosophically. "Overall we came third, not bad for the youngest team, but we'll be back," he adds.

And leaving students wanting more is at the heart of the QinetiQ challenge – which aims to inspire the next generation of future scientists and engineers. It certainly seemed to do that for the AVC team. Before the awards were presented, the students were taken on a tour of the training facilities for the apprentice engineers; a fantastic workshop with traditional and high-tech resources for the study of avionics or aircraft engineering.

Later, during an awards ceremony, all the teams taking part were presented with QinetiQ bags by one of the senior staff, who commented on how well the day had gone and that QinetiQ would be hosting another competition next year.

"All in all," concludes Mr Ross, "It was a really good experience of what the world of engineering can offer possible students. For anyone who likes practical work with the challenge of understanding maths, science and technology this could be a career pathway for you."

"This has been a valuable challenge," says Mr Webber. "It was really quite hard for our students, particularly as the other teams were all Year 9 students. We are pleased they did so well. And we think their success could be no better vindication for our STEM provision at the college. It proves just how important we think science, technology, engineering and maths are."

Links for life

QinetiQ employs more than 10,000 people worldwide, and its scientists and engineers solve some of the world's most important problems. "These sorts of industry – school experiences are vitally important," insists Simon Sparkes, test pilot and former Commanding Officer at the QinetiQ/ MoD's Empire Test Pilots' School based at Boscombe Down. "The way that QinetiQ engages with the next generation is to be applauded. Many vital STEM roles are not conventional 9-to-5 desk jobs, but they are amazing jobs that young people may never have considered or even knew existed.

"Many of these roles, especially around engineering, can be accessed via apprenticeships, and apprenticeships are vital to this industry. As an ex technical apprentice myself I understand the dilemma that young people face when deciding between university or a high-level apprenticeship; they are quite different. And experiences like this inter-schools challenge help to give teenagers a better insight into the opportunities open to them, and I think will help them to make informed decisions about their future education and training."

And it's just as important for schools to engage with industry. "At Avon Valley College the "STEM" subjects are taught separately," explains Mr Webber, "but teachers make connections between them wherever possible as there are naturally occurring overlaps and links between the subjects. Sometimes this is done within timetabled lessons, and sometimes through projects such as the ornithopter. It is through putting all the disciplines together and making links between them by applying that knowledge that students can really see the value in their learning, and it helps them to have a better understanding of scientific, mathematical and technological concepts and processes."

THE HELP DESK

Patrick Carroll addresses your queries about technology in the classroom – and beyond it...

Patrick Carroll is a Naace member, and head of English and ICT at Shaw Wood Academy.

Naace is the professional association for all who are passionate about the impact that digital technology can have on learning outcomes for young people, and is an inclusive community that encompasses schools, teachers, consultants and employees of the EdTech industry.

Naace
The Education Technology Association

Q I teach geography in a small secondary school in Essex. However, I have realised recently that, due to my experience and personal interest in technology, my colleagues are increasingly relying on me in a kind of unofficial 'technical support' role, too. Essentially, if they have a query or a problem, I'm the one they call on. As a self-confessed – and proud – 'geek', I have always been fine with this. Nonetheless, my career has now reached the point where I am considering moving on, and it's clear that doing so would leave my colleagues in a bit of a crisis with regards to how technology is used across the school. How can I start to untangle this situation (which I realise is at least partly of my own making)?

Firstly, your school will need to consider training another member of staff. I've recently taken it upon myself to share my knowledge and experience with a few of our teaching assistants so that they are able to take on multiple roles that I was previously responsible for, to free up more of my time. You can then ensure that they have a good level of understanding and can fulfil the responsibilities required, once you move on.

The other option is to get the children involved. Creating a team of 'digital ambassadors' is beneficial not only for the pupils' personal development, but for your school too, because it will provide extra resources when teaching staff are increasingly stretched. Finally, it may sound strange, but turning to YouTube for advice is a simple option that shouldn't be overlooked. There is a range of videos that can talk your staff through any situation that they may find themselves in. I'm often asked the same kind of questions from different members of staff, which I'm sure you may find too, so pointing your staff towards online videos means that they'll have resources to refer back to if they ever need to be reminded how to do something.

Q As head of English in a school where an exceptionally high proportion of students arrive in Year 7 with literacy skills that are considerably below the expected standard, I am always looking for engaging and innovative ways to support these youngsters, not only in English lessons, but as they access the whole curriculum. Mostly, this is through booster groups and intervention programmes; but I would love to know about any low-cost, high-impact technological solutions I could add to the package.

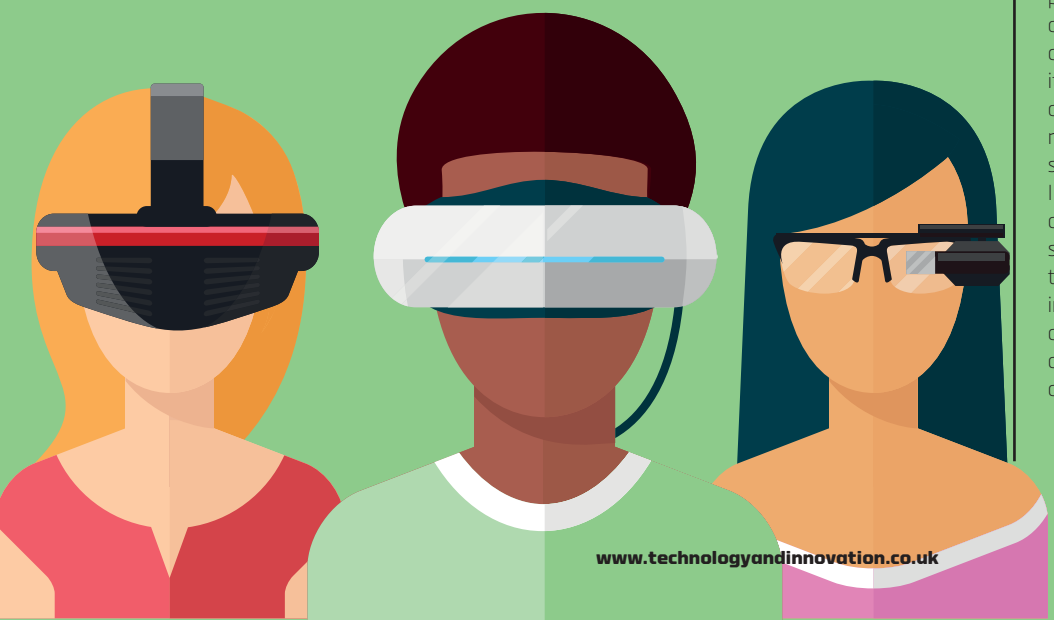
This suggestion might seem obvious, but the obvious is often missed! I'm personally a fan of BBC's education sites, such as Bitesize and BBC School Radio. BBC School Radio is designed for primary school students primarily, but can be very useful in this situation, for Year 7 students who are struggling or lacking literacy skills.

They're both jam-packed with interesting resources that pupils really engage with and of course they're completely free to access. The resources can be used to effectively support all areas of the curriculum with fun and interactive ways of learning. It's helpful that these sites are available on mobile devices too, so they can be used in the classroom and at home.

Q We've had the touchscreen revolution; and almost everyone seems to agree that personal mobile devices are absolutely the way forward for any schools that haven't already made the leap – but what do you think will be the major trends in edtech over the next five years or so?

I think the next big phase is going to be virtual reality technologies because of their immersive capabilities. Devices like the Microsoft HoloLens hologram technology and the Oculus Rift virtual reality headset are already leading the way in this space. With the use of these technologies, students are able to take virtual tours of historical sites and museums or explore the solar system from the classroom. They produce interactive simulations which, for teaching complex topics like the human body, is revolutionary!

Virtual reality (VR) is going to add so much to the curriculum because students will be able to understand concepts in much greater depth than they would from reading a book.



Q Our school – a medium sized academy in a relatively prosperous area – has had a BYOD policy in place for two years now, which is proving highly popular with students and their families. Unfortunately, we have also seen a drastic increase in the number of reported incidents of bullying during this period, mostly via various social media platforms. We already run regular information evenings for parents, hold an 'esafety day' every September, and have a clear set of sanctions in place for students who are found bullying – what else could or should we be doing to keep all our learners safe from intimidation?

I've experienced situations similar to this in my school and my advice would be to encourage the pupils to lead the information evenings for parents so that they can talk to parents about the issue from their point of view, which makes it more personal. This has dual-benefit because it's encouraging the pupils to recognise the issue themselves but also helps the parents to understand how online bullying might affect, or already be affecting, their children

In addition, there are a number of videos available online from the Child Exploitation & Online Protection (CEOP) Centre that can be really insightful, as well as a website I found recently called www.thiswaslouisesphone.com. This website was set-up by a French parent who sadly lost her 16 year old daughter to cyber-bullying. Created in collaboration with the Federal Police, it explores Louise's individual story, displaying some of the messages she received. It's extremely powerful and something that pupils can relate to.
I don't believe in using internet filters and firewalls because students are very savvy; they'll often find ways around these restrictions. It's much more important to educate them about appropriate online behaviour and the associated consequences. classroom and at home.

"TECHNOLOGY SHOULD BE *ALMOST INVISIBLE*"

Keeping up with the pace of change can be a challenge for schools – unless you let learning lead the way, say the experts...

As technology continues to play a more significant role in our everyday lives, both teachers and pupils increasingly expect to teach and learn in the same way they live. Schools are coming under greater pressure to incorporate the technology their pupils are most familiar with, and when this is embedded seamlessly into a clear pedagogy, technology can undoubtedly have a considerable impact.

But amidst that pressure, schools are in danger of investing too quickly in familiar technology without having a coherent plan for how it will support teaching and learning within their unique learning environment, most likely leading to significant time and cost implications.

"When you have a great experience at home using a tablet device, it's easy to think of ways it could be used in the classroom," says Steve Forbes, Head of Network Solutions at RM Education. "But a classroom is a very different environment and careful thought should be given to how they'll be used and integrated into the school's current technology.

"We also see parents, pupils and teachers demanding certain technology because other schools in the area have it, and that can lead to very hasty decisions being made. But without a proper strategy, these devices end up not being used or worse – being disruptive in lessons."

Clear goals

Issues such as these often occur when schools do not have the infrastructure to support the devices they have purchased, or when money isn't invested in training teachers on how to effectively use this equipment within the classroom. And whilst many schools are realising their pedagogy should be at the heart of the technology they use, for some it still leaves thousands of pounds of investment sitting in store cupboards gathering dust.

"Everything should lead back to what the school is trying to achieve," explains Steve. "Every school is different and each will have different strengths and areas that it wants to develop; so by understanding the vision and goals of the school, a strategy can be created to ensure that technology helps to

achieve these goals in an integrated way, as opposed to being an afterthought or something that is implemented separately.

"When technology is truly embedded, it helps to expand teaching and learning from being something that just happens within four walls to something that can be done anywhere – on the bus, at home, in the library – pupils can log onto a platform to share their work with other pupils and teachers and get feedback in real time, while teachers can really bring lessons to life."

Solid savings

For schools who do have a clear pedagogy in place, the improvement in teaching and learning isn't the only benefit; the time and cost savings are tangible too. Moving to 'the cloud', for instance, mitigates the cost of maintaining expensive servers on site that sit idle for more than a third of the year.

Schools can instead host a server in the Microsoft Azure cloud where they only pay for the time they are using it or utilise the some of the free applications that negate the need for traditional servers altogether. Productivity apps such as Office 365 and a management tools like Microsoft's Enterprise Mobility Suite give schools a powerful cloud-based platform that costs just a fraction of what a school would normally spend over a five-year period.

Free apps like Google Apps for Education, for example, can have a transformative effect on the way a teacher works – enabling them to set and collect homework projects, mark and provide feedback in realtime and capture evidence. When implemented correctly, many of these tools can be used to replace expensive software such as VLEs or additional servers doing the same job.

"There is definitely more work to be done to quantify the impact of tech on attainment," says Steve. "But what is definitely quantifiable is the impact technology has on teaching and learning when it doesn't work."

Plans for improvement

One school that understands this learning curve better than most is Fakenham Academy in Norfolk. In 2013, the school was placed in Special Measures and decided to address the conundrum by beginning a move to the cloud and slashing costs of hardware like printers from £50,000 to £10,000 in two years.

The academy is now rated Good, with outcomes improving fast in all areas. But Mark House, an Education Consultant at RM Education who led the change management process at Fakenham during his time there as an educator, attributes their success not only to making tangible cost reductions but to a change in attitudes about the role of technology in education.

"Technology is no longer moving at an incremental speed – it's incredibly fast, and the only way we can keep up is to think 10 times quicker than the current pace of change," says Mark. "To achieve that, many schools with, say, 100 printers, might think they need 110 to keep up, but the answer is actually that they don't need any at all.

"To develop a successful technology model, schools need the skillset, toolset and mindset. At Fakenham, we started our change management process by looking at how we could streamline our hardware whilst implementing technology that was going to drive real change. If schools can get their change management right, they'll increase productivity, raise standards and save money."

Forward together

Mark looked at technology from all three main providers and selected a Google suite of technology because the platform would help Fakenham to create an open, trusting and collaborative environment that supported their pedagogy. Since Google apps are also device-neutral, pupils could easily work on projects outside of school time using their own devices at home.

The result was that pupils' engagement grew exponentially because they were using technology they loved, and because of the ease of sharing content, staff emails went down, costs were reduced and there was less need for frequent meetings; making both staff and pupils happier.

"I do find it quite bizarre now when I go into schools and the children say: 'It's 11 o'clock so we're going into IT now'," says Mark. "No one should 'go into IT', as if it's an entirely separate entity from the rest of their education. It's so far away from a child's experience with technology in their everyday lives.

"When it's applied correctly for a school in the right way, technology should be almost invisible and enable staff and pupils to reach their full potential in a safe and collaborative way; that's the future of teaching and learning."

ABOUT THE AUTHORS

Steve Forbes (top) is head of network solutions and Mark House is an education consultant, both at RM Education. For more information visit www.rm.com

SUPPORTING THE COMPUTING CURRICULUM IN YOUR SCHOOL

Discover why the BCS Glossary of Computing is the definitive study aid

Now in its 14th edition, the BCS Glossary of Computing is the most authoritative and comprehensive work of its kind on the market today, and is fully aligned with the computing curriculum.

An important reference tool for teachers and students studying computing at GCSE level and above, it contains over 3,000 terms defined in context, divided into themes and fully indexed and cross-referenced, with new topics such as personal use of the internet included in the new edition.

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At BCS, The Chartered Institute for IT, the purpose is to make IT good for society and the BCS Glossary of Computing forms part of the wide-ranging work the organisation does to support computing in schools. BCS believes that every child should have the opportunity to study computing and build digital literacy to enable them to thrive in a digital world

BCS's Computing at School (CAS) network connects over 20,000 teachers, IT professionals and academics across the UK who volunteer to enhance computing education in schools and colleges. The CAS community recently celebrated the launch of its 200th hub, at Norlington School and 6th Form in Waltham Forest. If you're interested in joining CAS, visit community. **computingatschool.org.uk** to find out more.

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BCS's vocational ECDL qualification is delivered in over 2,000 schools across the country, equipping students with the skills to use a computer confidently and effectively. The qualification covers core IT applications including word processing and spreadsheet software, building a more efficient learner and providing students with many of the digital skills employers are looking for.

Watch the latest video at **bcs.org/ecdl/** schools to see how Wyvern College delivers ECDL to their year 11 students.

MORE INFO

For more features and blogs, visit the Education Hub at bcs.org/digital

Q&A INTERNATIONAL BACCALAUREATE

Craig Escott, examiner recruitment and training manager, explains why it's worth becoming an IB examiner

VISIT: WWW.IBO.ORG/EXAMINERS EMAIL: EXAMINERS@IBO.ORG

T&I Why is the IB so suited to 21st century classrooms?

CE The International Baccalaureate® (IB) programmes aim to develop inquiring, knowledgeable and caring young people who are motivated to succeed. They encourage students of all ages to think independently and critically, to challenge assumptions, consider both local and global contexts while becoming multilingual. IB World School students learn how to drive their own learning and they develop strong academic, social and emotional characteristics. They are also likely to perform well academically – often better than students on other programmes.

Is there relevant professional development available for teachers?

The International Baccalaureate® (IB) offers many benefits to teachers. IB teachers are given access to high quality professional development that encourages critical thinking, self-reflection and dedication to lifelong learning and continuous improvement. They benefit from innovative and diverse education frameworks, unit planners, teaching resources and evaluation tools. They can become IB Examiners, participate in certification and degree programmes. Non IB teachers have an opportunity to develop as IB Examiners, provided they have experience teaching a subject at the appropriate level, and to the specified age group. In addition, through a collaboration with Kent State University, all examiners are able to apply for US teacher credits for completing this role.

How can I contribute to the success of IB?

As part of assessment processes the IB works with examiners and senior examiners in a variety of different roles. We are constantly looking to recruit new, skilled examiners and senior examiners as the IB continues to grow. When you join our pool of examiners, you will make an individual contribution to the IB's mission, building upon the IB's 48 years of experience and the work we currently carry out in countries all over the world.

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READ ALL ABOUT IT

Every computing department should have a library, says Terry Freedman – and here's how to make it happen...

Like all educators, computing specialists should read more than just material directly related to what they're teaching. It's about being, and being seen to be, an expert in the subject. For example, how does what you're teaching manifest itself in terms of real problems? Also, why does what you're doing work (or not)? What is the theory behind it, or the research backing it up?

These questions suggest that you should make time to read the news, and to keep up with research. You're probably doing the former anyway. As for the research, reading magazines like Teach Secondary (and my own newsletter, Digital Education) are good ways of keeping informed. But what about the students?

Knowledge is power

As well as instructional material, students should read about how what they're learning applies in the real world. Also, about developments – not only in technology itself, but also in the way computer scientists think.

Why? Well, I like to believe that we're training students to think like computer scientists, not simply tutoring them in the best way to pass an examination. When it comes to applying for jobs, apprenticeships or university, the well-rounded student – the one who can talk about the subject – stands a much greater chance of success than the one who can only answer exam type questions.

Sometimes, universities ask applicants to show why they should be offered a place. Many students fall into the trap of talking about how 'passionate' they are. It is better to be able to show that dedication and enthusiasm for the subject, rather than just talk about it; well-read students are able to do that with the turns of phrase they use, as well as through their wider knowledge.

Give them a reason

Sadly, many students take a very utilitarian view of reading. They say, if a topic isn't going to be on the exam paper, then why waste time reading about it? So you need to take steps to encourage them to read more widely.

First, if your school still has a library, talk to the librarian about magazine subscriptions to popular computer-related titles. If there is no budget for this, ask if the school library could be part of the Zinio scheme (see 'further ideas', right). This is a scheme whereby library members can obtain digital versions of magazines free of charge. If the school library is not eligible, then find out whether your local library – if you have one – has such a scheme.

Second, check the shelves for computing books. If the only two there are about programming mini-computers or Pascal, published circa 1970, then ask the librarian if there is a budget for more – and offer to recommend some suitable titles.

Third, even if you have a thriving and well-funded school library, build up your own departmental one. It could be as unprepossessing as a table or two in a computer lab – the important thing is that a range of books is available for interested students, and a culture of reading around the subject is developed.

On the shelf

Your departmental library should include books, newspapers and magazines. But where will they come from? Newspapers are easy: bring in yours from home. It's not ideal to have papers that are a day or two old, but it's better than nothing. If everyone in the department were to bring in their daily broadsheet (or tabloid!), with a bit of luck your library would always have two or more different titles. And if not, at least there would be multiple copies to go around. Magazines can be supplied in the same way, if you or your colleagues subscribe to any – and they don't need to be specifically focused on computing, either (see 'further ideas').

As for books, it would be good to spend a bit of money if you have a budget; sometimes you can get an educational price. If you have the space, also think about including leaflets; advertisements; official publications such as curriculum guidance, exam specifications, and government policies; and posters. Leaflets and advertisements, if well-chosen, can easily show the contemporary, everyday relevance of what is being studied, as can posters. The official stuff is for you and students to consult when necessary.

Maximum appeal

If your department has self-published anything, then include copies of such works. For example, if your departmental handbook or schemes of work have been attractively presented, then they should be there for students, teachers, or visiting parents to peruse. Obviously, if you have self-published any of the students' work, copies of those books should be there too.

There are several ways of ensuring the library is used. Most obviously, set work that entails the students' having to consult the resources. And make sure the facilities are attractive; so, no scrappy newspapers or dog-eared thirty-year-old books.

Lead by example. Make sure you and your colleagues refer to the books and other resources in lessons, and encourage students to read – not least because it's a pleasurable thing to do.

FURTHER IDEAS

+ Details of the Zinio scheme may be found at **recordedbooks.com/our-products/digital-magazines**.

+ If you have a school or local library, ask them if they work with schools on projects; they may be able to lend you class sets of resources like reading material and posters, and even physical artifacts, for a term.

+ Don't limit yourself to computer related titles when it comes to magazines. For example, the weekend supplements often have a section about useful apps, while *New Scientist* and *The Economist* often have articles about digital technology. The latter also has a regular supplement called *Technology Quarterly*.

+ The same applies to books. I'm currently reading a work called *What's yours is mine*. Although it doesn't sound like it has anything to do with technology, it's about the so-called sharing economy, eg Airbnb, which is made possible through digital technology.

ABOUT THE AUTHOR

Terry Freedman is an independent educational ICT and computing consultant, and publishes the ICT & Computing in Education website and the Digital Education newsletter at www.ictineducation.org.

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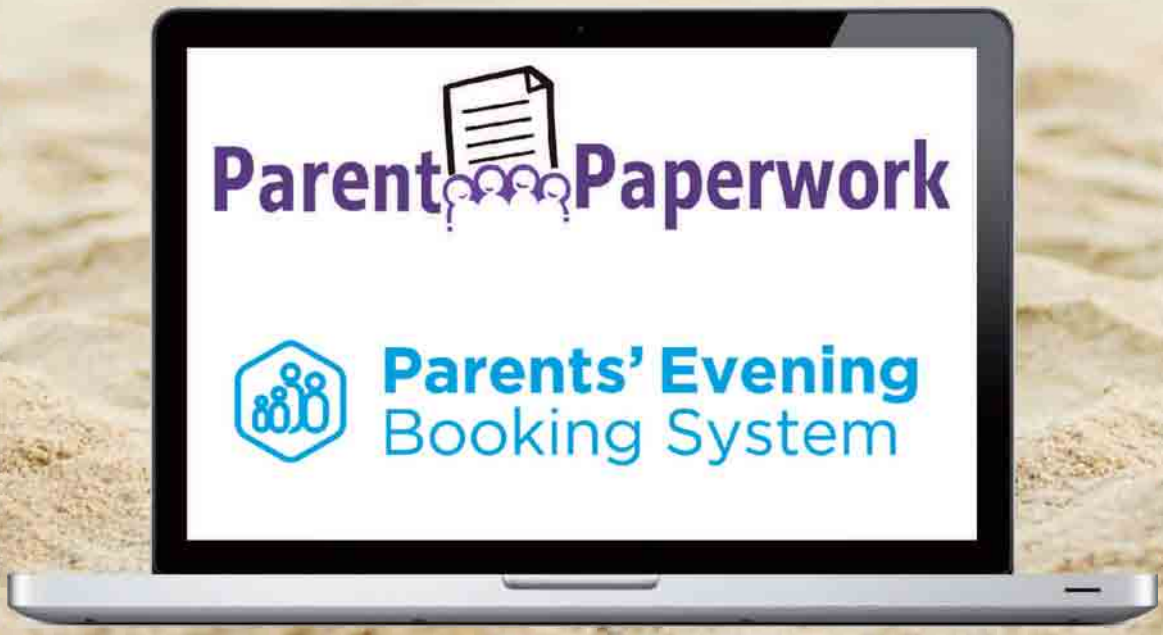

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INFRASTRUCTURE ESSENTIALS

Keeping your school ahead of the curve

FUTURE PROOF

Mark Chambers offers a simple, four-step process to help schools ensure they make efficient technology investments...

Schools are faced with the constant challenge of keeping up to date with the latest trends in technology, with around 50% expecting an increase in exposure to ICT in lessons for 2017. However, poor connectivity, inadequate training and a lack of planning can hinder schools from improving their technology provision; which is why a clear structure for the implementation of innovation is crucial.

Step one

The first step is getting the right infrastructure in place. While there is a great deal of enthusiasm for new technologies in schools, until the appropriate systems are in place to facilitate their effective use, investments can be left to gather dust and the potential for high-quality learning is lost.

Infrastructure includes everything from hardware and software, to systems and facilities such as central networks, routers or cloud-based storage. These elements form the foundation of effective technology management, especially when implementing new devices, so it's vital to focus on getting this process right.

Step two

Next up is training. As with any new investment, making sure that teachers are properly equipped with the skills to use the new systems is just as important as the implementation itself. When dealing with suppliers, make sure that continuing professional development (CPD) is included as part of the package and that it is of an assured quality. Without this, those teachers who are less confident with technology may struggle to make proper use of it, or avoid using it altogether.

Step three

How will the new technology improve teaching and learning? It is evident that schools are experiencing pressure from society to adopt new technologies, but this should not be the sole reason for doing so. For example, if your school chooses to purchase 100 iPads, consider exactly how they will be used and why they're needed to improve learning. If you are unable to answer these questions, it's simply no good spending money on them!

Step four

The final step in the process is to evaluate your technology investment against your school's goals and priorities. Were you looking to reduce the time spent on administrative tasks, or was your focus on improving engagement in the classroom? Either way, you need to ask yourself: did we achieve this? You should also evaluate the success of any external partners and suppliers that you've worked with to ensure that you are receiving value for money and that the product or service provided corresponds with your school's priorities.

Mark Chambers is CEO of Naace.

46%

of schools feel unable to maintain their planned ICT investments in 2016/17

Source: BESA and Naace, 2016

BROADCASTING HOUSE

Digital tools are all about giving students the power to create – so why not let yours have a go at making a podcast? About five years ago I started making podcasts to help with learners' revision. It took up huge amounts of my time and, in all honesty, they weren't very good. So I started asking the students to make the podcasts instead and the results were transformational. As they had ownership of the material, they made really extensive use of the medium.

I would advise using either audioBoom (free) or Spreaker. Quality is everything, so make sure students have a script before broadcasting, and follow basic e-safety advice about not sharing personal information. You might want to consider reviewing students' work before they post it online – I'm all about building relationships and trust, but even the nicest kids can make flippant comments that could be misconstrued and bring the school and yourself into disrepute.

Extract taken from Teacher Geek, by Rachel Jones (Crown House)

CRACKING THE CODES

While many schools have a blanket ban on mobile phones, Burnt Mill Academy in Essex has found intriguing ways to make them part of the teaching and learning process...

Mobile phones must be 'invisible' at Burnt Mill Academy, a comprehensive in Harlow, Essex. Get caught texting your mates or listening to music around school and the device is confiscated without question. But, the school believes there is a place for the mini computers in the classroom; after all, the students' futures will heavily rely on making best use of the modern technology in their pocket. Science teacher and tech fan Paul Andrew sees the mobile phone – and, in particular, QR codes – as a smart tool in his teaching toolbox.

A QR code – or quick response code – is a type of two-dimensional barcode which can be scanned with a mobile phone to link the user to a specific piece of information, a web page or video. "The idea behind utilising QR codes is to find different ways of engaging students," says Mr Andrew, who has been a teacher for 20 years. "We are trying to get them interested in fact-finding, data gathering and information processing. It's about making use of the most powerful thing in their pocket which is their phone."

The school first incorporated QR codes into sharing videos created in lessons. Using free code generator www.qrstuff.com, students were able to easily share links to their creations on the school's YouTube channel. Now, the technology is used in a much wider variety of ways.

"We've adapted and grown our usage of the codes," explains Mr Andrew. "We can use the same website to create codes linking to text, writing short pieces of text as you would in a Tweet. The longer the piece of text, the more complicated the code becomes. We made it very easy to start with."

Mapped out

"One way we have used the codes is to have a list of key words in science, with QR codes posted up around the room linked to definitions," he continues. "Students had to use their mobile phones to scan the codes and link the key words to the correct definition. It's a bit more interactive that way. Developing it a bit further, we did a QR trail where we started with one question – for example, what is this part of an atom – and the answer would take them to the next step, giving them a letter at each point. If they followed the trail of QR codes correctly, the letters spelt out a key word."

Learning maps are a new trend at Burnt Mill, spelling out to students how to tackle a piece of work, giving pointers of what might be a 'deep', 'deeper' or 'deepest' possible answer. They have been developed with QR codes in mind, with helpful web pages, explanations or videos linked via codes – something that would take up pages of paper without the code and make the instructions seem daunting. The maps, used once every half-term, are seen as a support mechanism, with the QR codes linking to helpful additional information students can choose to rely on or not.

Students themselves are even starting to incorporate the coding into their lessons, with a recent Year 7 class creating a QR code in answer to a piece of homework challenging them to come up with a visual way of revising.

"We are trying to get them interested in fact-finding, data gathering and information processing"

As well as utilising the codes as a teaching method, Mr Andrew also gives whole class feedback on work using the technology, scanning individual pieces of work and showing on a screen the positives and where they could be improved. "I use the codes as a good visualising tool. If you show someone how to do something, it's much more powerful than when you just tell them."

Part of the package

While the benefits to using this technology are clear, there are a few pitfalls to watch out for. "Most students these days have half decent phones," explains Mr Andrews, "but not all have adequate data packages for viewing video while at school. For those who don't, we are able to lend them our iPads or our own phones for the tasks in hand. There is also the issue of gaps in mobile phone reception across the school site which we have to consider when planning these lessons. Handling videos during lesson time can slow things down, so it makes sense to keep video links for homework. Like with anything, if you use QR codes too often, the students will get to the point where they are bored of it and switch off. Now, I leave it for a while and then come back to it, which gives it a far greater impact."

While QR codes don't necessary make for a better teacher, Mr Andrew says it's another tactic to get students on board with what you want them to learn. "QR codes are just another tool," he concludes. "They are just a really good way of showing information which students can choose to look at or not. It will always be around and it will continue to be a part of my way to make lessons a little bit different. It's an additional tool children do find interesting and engaging. It gives you a way to improve teaching and learning. That's what I'm here for, to inspire young people to have an interest in science. Making use of technology makes sense as it's the future."

LAGGING BEHIND?

Poor connectivity is still a problem in far too many schools, says Neil Watkins – and often, an unnecessary one

With the multitude of devices and technologies available to schools, the traditional classroom is changing; it's becoming more collaborative, interactive and engaging. Yet, according to the British Educational Suppliers Association (BESA) Tablets and Connectivity report from June 2015, only half of primary and two-thirds of secondary schools record having an ideal level of broadband connectivity, with limited improvements expected by the end of 2016.

In addition to broadband connectivity, the report also highlighted the importance of wireless networking connectivity. 41 per cent of schools currently do not have ideal broadband bandwidth, while 48 per cent do not have ideal WiFi capacity. This is an issue because without the necessary infrastructure, tablet provision and use may be restricted. While some schools have ensured that they have invested in wireless technology prior to their extensive use of tablets, others have substantial tablet provision, but still require improvements in wireless connectivity.

Internet connectivity varies by location, with some schools facing a much greater problem than others. For example, this is a well-publicised issue in rural areas, where schools are struggling to get fast internet because they can't get their network provider, the government or their local authority to cover the cost of the manual labour involved with digging up the road to lay wires. However, there is now a 4G solution on the market that gives schools access to a 4G connection at a price that is just as affordable as fibre broadband. It also means that roads no longer need to be dug up, so disruption and costs are minimised.

A raw deal

From my experience, too many schools stick with what they have had in place for the past few years, even if it's not ideal. Their view is that it's too big a challenge to change things and they are generally nervous about making such a major decision. However, this shouldn't be the case at all. If you find the right supplier, they should be able to work with you on a consultative basis to help achieve your aims and objectives without any risks.

> "Schools are further behind with their level of WiFi connectivity than they'd like to be, with only 52% experiencing the ideal level. However, this is expected to rise to 89% by 2020..."

Some schools have been persuaded to sign five-year deals for connectivity, but they're quickly realising that this isn't feasible, as technology evolves so rapidly. Something that's suitable for a school's needs in 2016 is likely to become outdated and no longer fit for purpose after a few years. I would always suggest that contracts should be three years long at an absolute maximum.

Of course, for many, reviewing internet connectivity every year is a pain, but what schools should be asking for is automatic annual increases in bandwidth. As a rough guide, you should plan on using two to three times more bandwidth in three years' time than you're using now.

If I could only offer one piece of advice, it would be to plan ahead. If you're looking to buy a number of iPads next year, you should be asking what that is going to do to your bandwidth and WiFi network. I hear so many schools say "We bought 30 iPads, but they're so slow!" Of course they're slow; and in fact, unless you put in the right infrastructure they will destroy the network, because they regularly connect to the internet to check licencing.

Again, if you plan on switching service provider, pre-planning is key. Many take 120 days to establish a new connection. This is due to the demand in the country, which of course doesn't only come from the education sector. If you leave it too late you're likely to have to go with the same provider as you have always used and therefore you risk being in a poor negotiating position.

Think big

So, how much bandwidth do you need? Well, this varies. For example, the NEN guidance from October 2013 says by 2017 secondary schools should be asking for 297 Mbps and primaries 30Mbps, but to me, this sounds out of date already. We've had enquiries from schools asking about 1Gbps in secondaries and 100Mbps in primaries!

Ask the experts

It is evident that problems still exist when it comes to internet connectivity. Schools are further behind with their level of WiFi connectivity than they'd like to be, with only 52 per cent experiencing the ideal level. However, this is expected to rise to 67 per cent by 2016 and 89 per cent by 2020, so the future looks promising.

Teachers, and often the ICT staff within a school too, cannot be experts in every field, especially when it comes to particularly complex areas such as technology. As such, they need to seek valuable partnerships with external experts that can manage this process for them, making recommendations based on the school's individual requirements.

Any good supplier will only charge you for the technology you need and won't tie you into a lengthy contract, so you have the flexibility to grow and adapt as the sector changes and your school's needs develop too.

ABOUT THE AUTHOR

Neil Watkins is managing director of DfE recognised IT procurement framework, Think IT

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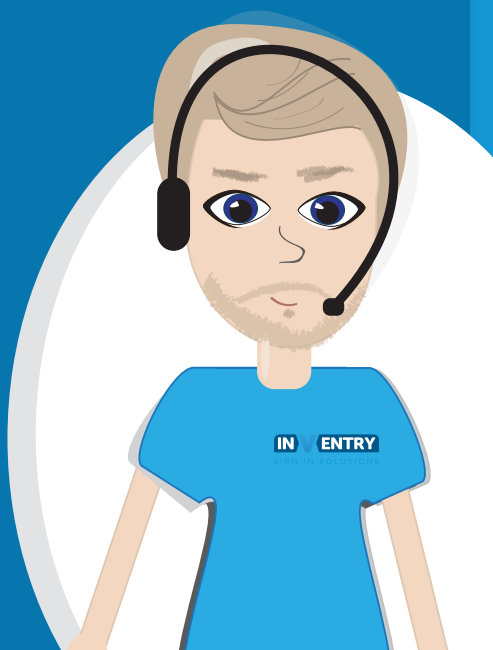

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THE MANAGEMENT

What should schools expect from their managed service provider? **Neil Brown**, **Mags Cowan**, **Richard Restall** and **Robin Casson** are in agreement...

Wikipedia defines managed services as "the practice of outsourcing management responsibilities and functions, and a strategic method for improving operations and cutting expenses," but in North Tyneside, schools' experience of managed services has differed vastly over the years.

So what is, or should, be the definition of a managed service provider (MSP)?

Just about every school in the UK will say that learning technology is anything but predictable. Aside from the normal desktops, laptops, and software, schools have more specific decisions to worry about including virtual desktop, single sign on, VoIP, safeguarding, and mobile device management. Because a lot of money is involved, often, the wrong decisions or worse than that, no decisions, are made.

With that in mind, here is our advice for schools on what you should expect from your MSP to justify their employment:

1 Partnership

Having worked with many companies over the years, we are well aware of most suppliers' objective to sell us a product regardless of whether it actually aligns to our needs. We therefore recommend you look for a supplier who wants to work in partnership, rather than just sell their products. Unless your provider really takes the time to understand your individual needs, then you cannot hope for an improved infrastructure.

2 Your point of contact

Leading on from this, another good way to measure the credibility of your service provider is to consider with whom you are dealing on a daily basis. If it is a sales person, paid on commission, there is something wrong! You should always meet with managers, developers, and IT engineers, who will be experienced in getting the right solution for you, not simply signing you up to the latest innovation regardless of your needs.

3 Pressure

The next important criterion of a good MSP is to find one who never makes you feel under pressure. Avoid a provider who has a narrow list of suppliers and products that you are forced to adopt; the choice should be yours.

4 Education sector experience

Our chosen provider works mostly in schools, not the corporate sector, and therefore fully understands our very specific needs. They are happy to schedule payments around budget cycles and recommend important things we may not have considered. Having worked with them, it's possible to see the immense value of a provider having an understanding of the education sector.

5 Informed advice

Only a service provider who has significant education sector experience can really give you credible advice on which products will suit your specific needs. Without an appreciation of what we needed and what was available, an MSP wouldn't be able to offer this invaluable service.

6 Evolution

From our experience, too many schools stick with what they have had for the past few years, even if it's not ideal. Their view is that it's too big a challenge to change things and are generally nervous about making such a major decision. Please don't settle for this.

If you find the right supplier they should be able to work with you on a consultative basis to help achieve your aims and objectives without any risks.

7 MANAGED service provider

For us, the dichotomy of what we wanted from a MSP was that on the one hand we wanted one company to manage everything, but we also wanted the freedom of being able to source different products from different suppliers. If something failed to work, we didn't want to have to ring each individual supplier, to hear that it isn't their problem. Your chosen service provider should give you the freedom to have what is right for you, while ensuring that the support of the whole infrastructure is managed by them.

8 In for the long haul

Going back to our initial point, we wanted a supplier who had an on-going two-way conversation with us and would be as passionate about our success after three years as they were on day one. Ensure they are always looking ahead to the future rather than just what they can sell you today.

9 Cost

Demand transparency! Does your MSP clearly state how they structure their fees? What price are they buying the technology for and how much are they charging you? Our service provider negotiates with the suppliers to get the best value price and passes this on to us. If the cost of a resource is based on the number of student users will you still be charged if the numbers drop? Ensure this isn't the case! The current move towards academy status is seeing schools become increasingly independent, operating away from the other schools in their area. The disadvantage is that schools lose that ability to buy together and generate even more price reductions. Use your MSP to apply this to your investments.

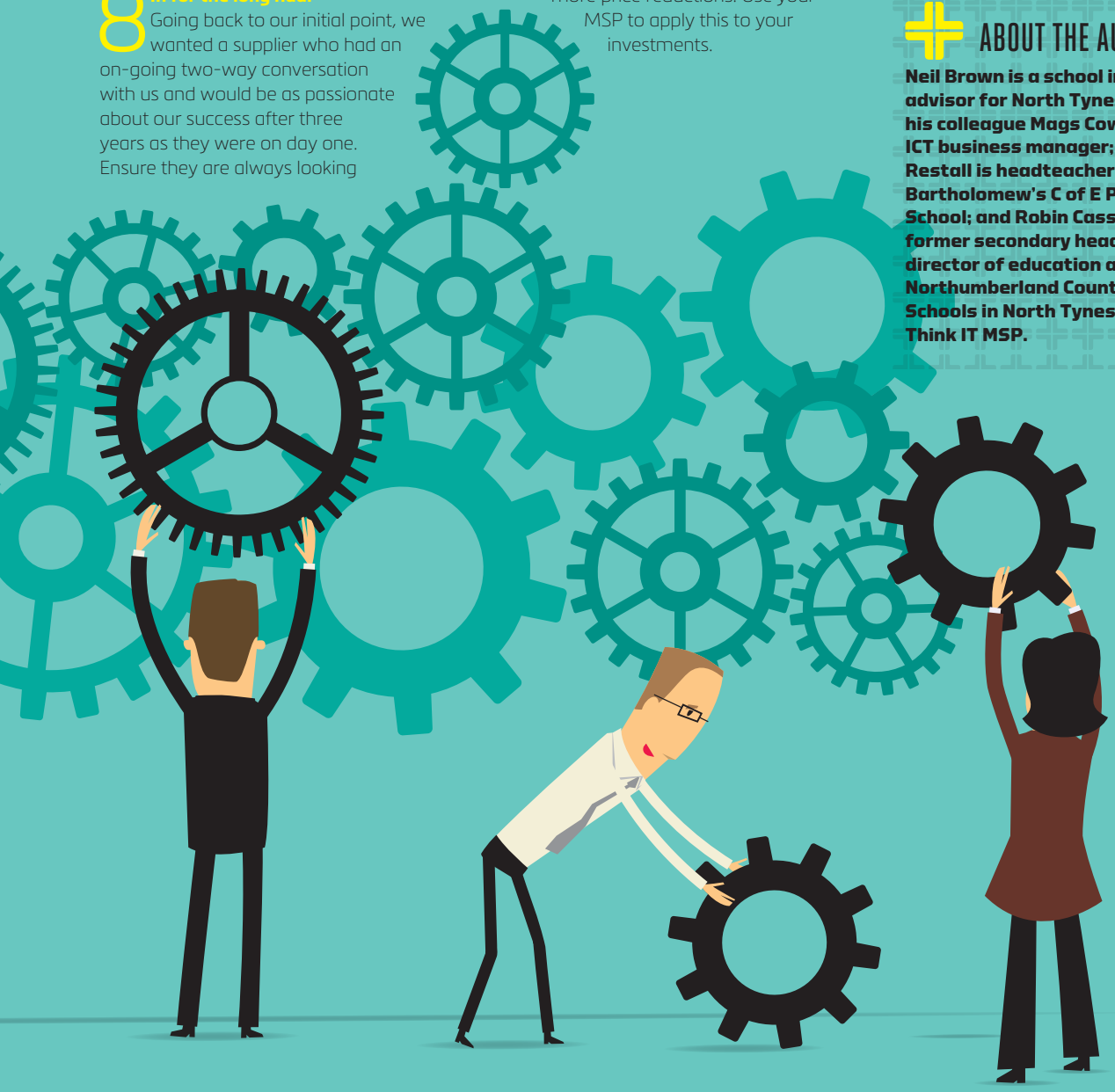
10 Free up funds

MSPs carry the image of being too expensive, especially when individual schools might not have a lot to spend. Your MSP should actually allow IT departments to pay only for what they need, and structure the payments to free up the budget for other important projects and activities. Ensure your MSP is working hard to achieve the best for you.

Our recommendation to all schools is no longer to shy away from making the move towards ICT perfection. If you take the steps we have recommended, it is easy to achieve this, while saving money in the long run.

ABOUT THE AUTHORS

Neil Brown is a school improvement advisor for North Tyneside Council; his colleague Mags Cowan is an ICT business manager; Richard Restall is headteacher of St. Bartholomew's C of E Primary School; and Robin Casson is a former secondary headteacher and director of education and skills for Northumberland County Council. Schools in North Tyneside use Think IT MSP.



10 REASONS TO LOVE YOUR PRINTER....

A new generation print system could have everyone in your school working more effectively, says Anna Blewett – so prepare to meet your inner reprographics nerd

Just check the printer tray, will you? Full? That'll be this morning's Year 9s printing their hilarious Game of Thones memes again. Empty? Expect 25 copies of the same CV to shoot out shortly because your restless colleague sent their A4 document as a 'letter'. But it needn't be that way; progressive institutions are increasingly finding salvation in tailor-made print solutions – and here are just a few of the reasons why:

1 It saves cash

"The most advanced printers and MFPs (multifunctional printers) on the market today increasingly come with software 'in the box' that allows schools to easily control their printing," says Michele Mabilla, senior product marketing manager at OKI Systems UK. "For example they offer user restrictions that make sure only the teacher can print colour while pupils must print mono. Given that colour printing costs, on average, up to ten times as much as mono, this hugely helps schools reduce print spend."

2 And even makes you money

Noel-Baker Community School and Language College in Alvaston, Derby, has long offered reprographics services to other local schools and businesses, but was struggling to meet demand for colour printing – including prospectuses. "We had reached the point where we had to make a decision to invest in new equipment or to cease offering a commercial print service to external organisations altogether," says the school's reprographics commercial manager, Joe Nutman. Upgrading (to a Ricoh Pro C720s) has seen the school's print services more popular than ever. "We can produce high quality colour in-house for a fraction of what it was costing with external print providers," says Joe.

3 It's efficient

"What we find is that schools often have a really expensive to run printer, such as an A3 colour device, in a department that really only needs A4 mono functionality," starts Pauric Surlis, education sector manager at Kyocera Document Solutions UK. "But with a new printing system it's easy to get rid of simple inefficiencies like this, meaning the department only has the devices it needs. Managed printing, from our calculations, has the potential to help primary, secondary and higher education make savings of around 25%."

4 Paper jams are a distant memory

"In a school environment, it's important that technology is deployed first and foremost to maximise the opportunity for students to grow and develop," points out Michele Mabilla. "It's crucial that as little time as possible is wasted when printing or managing documents so the quality and reliability of the printers, as well as the richness of their functionality, is critically important. Flat path technology, for example, offers an excellent way to avoid paper jams and minimise downtime."

5 It makes life easier

When Fareham Academy decided its A4 mono printers were undermining the efforts of its design and technology students it upgraded to new machines from OKI, with unexpected benefits. "One of my most important jobs is to provide full reports on pupils' performance, highlighting outstanding performers and those that need more help," says Andrew Stevens, assistant head at the time of the changeover. "This used to mean a stack of A4 mono sheets that managers and head teachers had to wade through to find what they needed to know. Now I print these on A3 sheets with colour, using features like traffic lights to help head teachers quickly find what they need to know."

6 It's eco friendly

Besides the carbon footprint of paper consumption it's the impact of consumables – inks and toners – that causes environmentalists most concern, a fact manufacturers are increasingly prepared to address. "Schools are often offered the most common seller but if you ask questions you may be offered something different," says Josh Fothergill, policy lead at sustainability association IEMA. "For example, are cartridges taken back and refilled or crushed for recycling? Generally refilled and reused is a better option for the environment."

7 It saves on faff

"If schools migrate to a cloud printing management system, the whole fleet of printers can be managed by the cloud," says Pauric Surlis, "bringing automatic toner deliveries, automated engineer call outs and allowing staff to centrally manage how much is being printing across the school. This allows the IT department to spend less time on printing queries and more time on the stuff that matters."

8 It's mobile

According to a recent study commissioned by Lexmark, whilst 60% of schools use tablets or plan to use them in the near future, only three percent currently have any kind of mobile print functionality in place. "Mobile printing technology and applications give staff and students print on-the-go convenience while also solving crucial challenges around document security," says Martin Fairman, UK and Ireland sales director at Lexmark. "Even better, they make sure teachers are not tied to their desktops or stuck in one room."

9 It's resource effective

"'Resource efficiency' is the term for using materials wisely – by having a password locking printer, for example, or a protocol to question whether an item needs printing at all," explains Josh Fothergill. "Resource effectiveness considers if those materials need to be used in the first place, something that manufacturers are looking at. One particular brand takes apart out of service machines, replaces the parts that are at the end of their working life, fits up to the minute software and sends it back to work." Refurbished models offer new and improved capability whilst retaining up to 80% of the original materials.

10 It gives your institution the edge

Keen to attract new pupils in a cut-throat catchment? "Our third annual Education Technology Report revealed that 62% of students and teachers believe tech helps to act as a differentiator when competing against other schools and colleges," says Pauric Surlis.

...AND WHAT TO DO IF YOU DON'T

Bite the bullet

"Upgrading to an integrated printing system can be a large upfront cost," says Pauric Surlis of Kyocera Document Solutions UK. "But it can actually reduce ongoing costs significantly."

Shop around

"Choose vendors who can offer access to a trained network of partners and service providers to ensure you're able to offer a best-in-class customer experience throughout the product's life cycle," advises Michele Mabilla of OKI Systems UK.

Choose wisely

"Do your research and understand what's available," urges Josh Fothergill of IEMA. "The print system you plump for will determine the materials you're locked into using."

ABOUT THE AUTHOR

Anna Blewett is a freelance journalist with a keen interest in the education system - not least because most members of her extended family work within it.

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The products in OKI's award-winning portfolio – colour and black & white printers and MFPs (multifunction products) – feature ease of use, high-quality output, fast print/copy speeds, flexible media handling, and legendary reliability.

The company develops many of its own software solutions, and partners with industry-leading developers to create products tailored exclusively to the education sector. Most of its products have built-in capabilities that apply perfectly to the ever-evolving needs of the education environment.

OKI's proactive approach to world-class customer service and customised support enables the organisation to anticipate your changing demands, and ensures that your printing operations will run smoothly.

Customised solutions for education

OKI offers solutions that optimise document processing and workflow via the Smart Extendable Platform, flexible architecture that allows software developers and OKI Solution Partners to create customised solutions for specific needs.

Educators, for instance, can increase the efficiency of their processes through a host of web-based applications available through the web interface of many OKI devices. Users interact directly with these applications via the touch-screen on the device's operator panel.

As new applications become available, they can be added to your MFP's feature sets using embedded OKI Smart Extendable Platform technology.

OKI printing technologies – LED printing

Fundamental to any digital printer is its light source, provided by light-emitting diodes (LEDs). LED print heads use a pixel-sized, modulating light source to recreate images. A distinct advantage of LED technology in office-class printing devices (versus other printing methodology, such as laser or inkjet) is the ability to print on a vast array of media, including banners.

Single Pass Colour™ digital technology

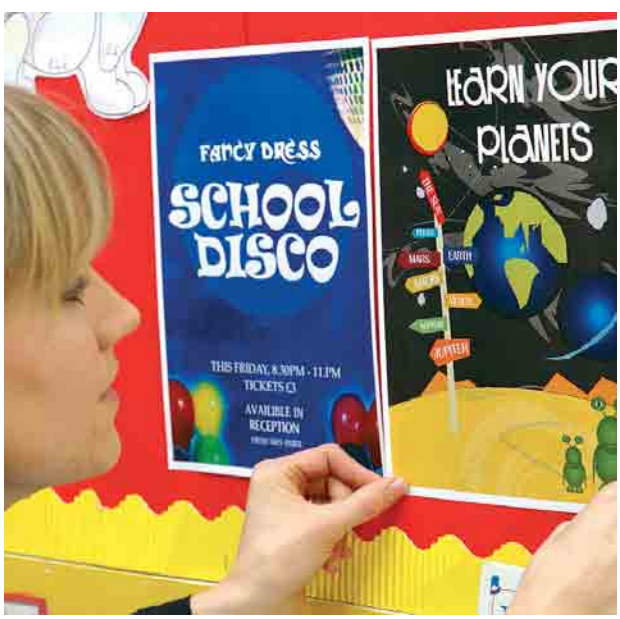
OKI Digital LED printers and MFPs are designed to print full-colour in a single pass through the print engine. The paper media follows a streamlined path, moving beneath in-line OKI print heads – through to the fuser, and out to the user. It is an intuitively efficient printing method: simple, effective and fast.

Colour in the classroom

Bring learning to life through the use of OKI digital colour printers and MFPs. Produce colourful educational materials that can have measurable advantages for your students.

As independent research shows:

+ Colour documents increase learning and retention by 78% – a vital difference in making the most of limited classroom and homework time
+ Colour reduces errors by up to 80% – it focuses student attention where it should be
+ Colour helps students locate information 70% faster – colour highlights points on a map or chart, or key details in a lesson
+ Colour increases comprehension by 73%



– this enables teachers to deliver lessons their students will understand more quickly and more deeply

+ OKI colour printers and MFPs feature HD Colour Printing technology for unmatched output, enabling teachers to create vibrant material for students and administrators.

Colour beyond the classroom – 5+ colour technology

The OKI Pro9000 Series highlights the unique Multimedia Production Platform. These graphics-oriented A3 printers—designed and priced for in-house applications—include 5-station devices that produce materials on an incredible range of media in CMYK plus solid White toner or Clear gloss toner. They give administrators, educators and students the ability to create extraordinary materials-design project prototypes, fundraising material, invitations, brochures, stationery, etc. – on demand and in-house – in breathtaking HD Colour with White or Clear spot colour!

On-demand digital transfer system

Turn your school's fundraising efforts and incremental sales into profits. This turnkey solution from OKI® and industry-leading manufacturer TheMagicTouch® is a cost-efficient alternative to outsourcing customised memorabilia and 'school pride' items. It's perfect for printing on virtually any substrate – fabrics, cardboard, plastics, ceramics, glass or metal. The transfer process is fast, safe and simple, with no special training required. Products can be printed in a matter of seconds. Use the system for T-shirts, sweatshirts and mugs; for specialty items like clocks, key chains and tote bags; and to produce colourful awards plaques, ID cards, display placards, and site signage.

It comes with everything you need:

+ A reliable OKI digital printer with HD Colour technology
+ A variety of image transfer paper
+ An easy-to-use professional heat press
+ Blank product samples for practice and to demonstrate the possibilities
+ Comprehensive customer service and support.

Controlling costs

OKI understands the delicate balance of providing an excellent education within a limited budget. OKI also offers print accounting and management solutions to help schools regulate their resources.

OKI devices yield thousands of printed pages at a fraction of the cost of inkjet. Having performed hundreds of print fleet assessments, OKI has identified an average potential print savings of 25% in the education segment alone.

Feature-rich OKI MFPs combine printing, copying, scanning and faxing in one device, maximising productivity and available space; they're the logical alternative to larger, costlier copiers.

Cost-cutting software

PaperCut MF™ – The PaperCut Education Edition prevents excess and unauthorised printing, copying, scanning and faxing, resulting in lower paper and toner costs. Its unique scalable design makes it suitable for sites of all sizes, regardless of network environment or platform.

+ PaperCut is embedded with all OKI MFPs employing the Smart Extendable Platform and works to:
+ Create an efficient and secure printing environment
+ Give the institution the ability to account for all activity
+ Produce detailed reports for on-screen viewing, printing or exporting
+ Enable the administration to recoup the costs of printing and copying.

OKI PrintSuperVision

This software solution allows administrators, teachers and/or computer technicians to control printer usage by determining who and what can print in colour, black & white or not at all. Printing access can be determined by user name or PC/server name, and limited to specific applications, file types or URLs (websites), according to the policies that you establish.

Once configured (i.e., policy is set on the device), the software determines how – or if – incoming jobs will print. Policies are password-protected for added security, and can be changed in real time for special projects and classroom assignments.

Document security

Every day, school employees print and copy important and sensitive information. In most cases, security barriers, such as server firewalls, protect this information —until it reaches the printing process, where anyone can walk away with a document. OKI offers security-enhancing solutions built into or available with its products.

Secure print

Documents to be printed are stored on the printer/MFP's hard disk drive. When a user-defined 4-digit password is entered on the printer's front panel, the document prints. The document is not retained on the hard drive after it is printed or accessed, so password-protected documents cannot be retrieved by other computers.

Mobile printing

Now more than ever, everyone is going mobile. Likewise, printing has gone mobile, too. If you're a student or educator, you can print documents quickly and easily from a smartphone or tablet – even when you're out of the classroom.

Notably, many new mobile printing apps can augment document security with WiFi®-based print release options (e.g., QR codes assigned to specific devices), limit printing to only those users requiring it, and track costs to help manage resources and budgets.

+ Airprint™-enabled printers and MFP products
+ Google Cloud Print-enabled MFP Products
+ OKI Mobile Print application for Android® – providing direct printing to OKI printers and MFPs
+ Compatible mobile print applications – reviewed and tested by OKI to ensure full compatibility.

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THE INS AND OUTS OF IT

When it comes to school access security, neither complacency nor compromise can be an option, says BESA's Mark Rosser

Secondary schools are busy establishments, many with thousands of students, staff members and visitors on the premises at any one time. With section 547 of the Education Act 1996 making it a criminal offence for schools to give admission to people without 'lawful authority', how can they manage access security?

The most recent non-statutory guidance for schools (Advice on school security: Access to, and barring of individuals from, school premises), was issued by the Department for Education back in December 2012.

It reminds us that although fulfilling a public function, schools are private places; the public has no automatic right of entry. While parents of enrolled pupils have an 'implied licence' to come onto the premises at certain stated times, it is up to the schools to define and set out the extent of such access: parents exceeding this would be trespassing.

In cases of abusive behaviour or threats to staff, pupils or other parents, schools may ban parents from entering the premises. Moreover, there could perhaps be issues with estranged parents, or family members who are legally restricted from seeing their child.

Target practice

And of course, while the safety of the students is paramount, there is the issue of property, too; schools need to consider the risk of damage to the school and its contents, and potential robbery of high value technology and cash.

Various county's constabularies produce school security guides to remind us that criminals tend to see educational establishments as a soft target. Many of the older buildings have areas of security vulnerability; coupled with frequent and long holidays, this leaves schools open to criminal attack.

Incidents over recent years have driven schools to put more focus on security and leave less down to chance. Many establishments must now pay particular attention to exactly who is entering the site and ensuring that all visits are fully tracked and recorded.

Therefore, across the UK, new advanced technologies are being introduced to improve the safety and well-being of pupils in and around schools, protecting them from danger and guarding the schools' assets.

But how far should schools go?

Extreme caution

New gates with swipe cards, webcams and high fencing surrounding the school with CCTV cameras can help manage movements both in and out of the premises. In some areas of the UK, metal detectors have even been introduced to prevent crimes, mainly weapons related.

Biometrics and fingerprint technology linked to a school's management information system are becoming increasingly common. For example, hand geometry scanners that read the unique print of a human hand have been introduced to ensure only authorised adults are picking up children. All of these technology-based options are readily available for schools. However, the fact that each child's finger print and biometrics have to be kept on record has introduced a whole new question of human rights, with full parental consent required.

The biggest mistake that is being seen in some schools is complacency. Schools have to know exactly who is, and who has been, on site. With tight budgets, these issues can often be ignored until after an incident has taken place. Assessing the required security levels and implementing them before any incident can take place should be something schools must action if it has not already been done.

Integrated technology

We recommend that schools take advice on these issues. For example, 'Visitor Management Systems' are commonplace in many schools. However, if you have such a system, other benefits can be realised: tracking and registering students, creating

attendance reports, integrating this system with a classroom seating plan and linking it to the overall school management system.

In most schools, these additional benefits are helping to improve the level of security being implemented, due to the various integrations with other systems.

Therefore, rather than invest in individual security systems, such as access control, CCTV, barriers, and gates, today's best practice investment in school access security is all about bringing the different aspects of security together to generate additional benefits for schools; reducing the total cost of ownership.

Through consultation with a security expert who understands the education sector's needs, a school should be able to decide how much functionality is right for its specific needs.

Track records

Systems should be able to automatically import student data from the school's current management information system. Staff should then be able to easily track late students, including exact amount of minutes late, time of arrival and reason for lateness. All class information can easily be kept up-to-date with minimal time commitment, allowing for functionality such as group tracking, enabling quick sign in/out of multiple students.

You may be able to track who is entering the school but do you know if they are approved to do so? DBS checks (formerly CRB checks) should be recorded on the system to ensure all staff and visitors are properly verified before entering the premises. DBS approved visitor or staff badges can then be produced, allowing each visitor's status to be confirmed at a glance.

For staff members and regular visitors, permanent ID badges can be useful to maximise sign-in efficiency. By recording photos of all intended recipients, most security systems designed for secondary schools should be able to create high quality, customised ID cards for each person. These ID cards can then be used in conjunction with the optional barcode scanner, allowing the user to sign in with ease, even collecting additional information such as the purpose of a visit or reason for leaving.

The right response

Denise Tarpey, ICT and MIS manager at Congleton High School explains that its security system is "Ofsted compliant, provides a DBS register/single central record, offers the ability to read from its existing MIS system, produces a fast and effective fire register and submits real time GPS tracking."

It sounds like a prime example of best practice – and it's certainly a system that is meeting the needs of Congleton's staff, students and families, however, in terms of the investment that schools need to make, to achieve an 'acceptable' level of security for its individual needs, sadly there is no single 'right' answer. There are so many influencing factors: the age of the building, the current level of security already implemented and age of these systems, potentially the area in which the school is located and the number of children at the school, to name just a few. Having barriers/gates in place to prevent members of the public gaining access to the school should be a minimum requirement.

Making the right decision for your school is vital; it keeps the relative cost and future investments low. What is important is, as for all technologies, getting the right system to ensure that once it is implemented, optimum functionality is offered but minimal time is required to manage it.

ABOUT THE AUTHOR

Mark Rosser is membership manager at the British Educational Suppliers Association (BESA); this article was written with advice and insight from Alain Squitieri, of BESA member and access security supplier, InVentry (inventry.co.uk)

Q&A EYETEACH

Trevor Wallace, MD of Metro Security, describes the company's range of innovative protection and added-value solutions for the education sector...

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T&I Why was eyeTeach developed?
TW eyeTeach makes use of Metro Security's long established fire safety and site security expertise, which includes significant research and development capabilities. Cumberland School in Newham, east London, asked us to design a bespoke audio/visual teaching aid and self-assessment system to match its teachers' needs, having rejected 'off the shelf' products because of their lack of privacy, limited controls and unsatisfactory design/build quality.

How does the system meet Cumberland School's specific needs?
eyeTeach is being used in the Cumberland School's history, English, science and ICT departments. It allows teachers to see themselves in the classroom environment and review their own performance and that of their students. Cumberland School specifically wanted an effective and cost-efficient way to improve its learning processes. The versatile eyeTeach system can also be used in class presentations, one-to-one student reviews (eg to replay an oral exam), as a website resource, and for in-house training purposes.

Does eyeTeach have complementary classroom uses?
eyeTeach makes use of high-definition audio recording devices combined with sophisticated Megapixel cameras. The system is an added-value development of existing technology, which can be deployed in more conventional ways to demonstrably protect pupils and teachers, primarily in complementary surveillance monitoring applications. In practice, the benefits of this CCTV coverage include deterrence, detection and potential prosecutions – via images that are of evidential quality.

In what other ways can education providers be safeguarded?
Cost-effective and meaningful defences for fire and security-related threats require safeguards against risks such as vandalism, arson, thefts, child abduction and physical assaults. A targeted approach, matching appropriate measures against the site-specific risk profile, may involve measures ranging from physical perimeter fencing and appropriate detector-activated lighting, through to IT equipment protection and visitor management systems, with dual-use operational management advantages such as health & safety information being provided for emergency situations – for example, as roll-call lists.

Q&A LEAPFROG 3D PRINTERS

All young people should know of the possibilities 3D printing has to offer, says CEO Sander Adam

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T&I What are the benefits to teaching and learning of having a 3D printer available?
SA Today's youth is constantly aware of current trends and through smartphones and computers they fully embrace the digital age. Design and manufacturing are becoming digital as well through 3D modelling and 3D printing, and the food market has also started 3D printing. Being able to work with 3D software and to translate this to physical objects through means such as a 3D printer is key towards preparing their position in the workplace of the future.

Why are your printers especially suited to an educational environment?
There are many different types of additive manufacturing machines, or 3D printers, based on several principles available today. The principle of FFF, or Fused Filament Fabrication, consists of applying layers of molten plastic and is straightforward and the whole process is directly visible to the naked eye. The machine parts are also simple, without using lasers or high grade lenses for example, which allows student to do maintenance on the machines themselves. This allows the students to not only use, but also understand how additive manufacturing works.

Can you offer supporting resources, such as lesson plans, for schools that invest in your printers?
Leapfrog 3D Printers offers a lesson plan that has been in use and improved over the last two years. The current lesson plan is a teacher manual and a student's guide which tells the students about different aspects of 3D printing and how to use our most used printer; the Creatr HS (High Speed). We also have an online course available at the moment. These are free to use and there are different courses available; an introduction course, education course and the more technical engineering course. Together these courses offer a comprehensive program for students of all levels of abilities and interests. The courses come with a teacher's guide as well to prepare the teacher and give the students the best possible experience. The biggest advantage of the online course is that we will keep updating the packages over time, keeping it up to date and keeping the users, and students, well informed. In addition the students and their teachers can automatically track the progress throughout the program.

What about ongoing customer service? Is that part of the package?
Leapfrog 3D Printers offers comprehensive customer support without any extra charge. In the rare case that you might come across any issue with your 3D printer our support team is available online or through the phone during European business hours.

THE WRITE STUFF

Today's students have grown up with keyboards and tablets, says Guy Snape – so could it be time to let them put their pens down during exams?

What was the last thing you wrote by hand? If you're anything like me, it was probably a shopping list, a cheque, or a brief reminder on a sticky note. Perhaps a birthday card. When required to produce anything longer, we almost invariably turn to the computer; indeed, for most adults, a request to write a report, an article or a letter in longhand would cause annoyance and bemusement. "Why?" we would ask. "It's so much faster and easier to write electronically. I can edit and improve things as I go without starting from scratch. I can send a copy of the work to a colleague the other side of the world in seconds. The environmental impact of paper production is vast." And so on.

Some adults who haven't learned to type efficiently may still find it quicker to write by hand – I am a fast typist, so I don't. My twelve year old daughter taps away nearly as quickly as I do, because she has grown up with computers and tablets. She certainly types far quicker than she can write with a pen.

Hard and fast

My children attend a forward thinking secondary school, where every student has exclusive access to their own iPad. They are also allowed to use a computer for homework, and they submit their work by email – developing skills that they will continue to use in adult life. And yet, as soon as they reach the end of year eleven, all the technological skills and advantages they have become accustomed to are thrown out of the window and they are forced to spend up to three hours for every subject, writing their GCSE papers in longhand. Why?

If you haven't recently tried writing the old fashioned way for three hours, I can assure you that it is just as unpleasant, inconvenient and arduous as it was when we had to do it for our own exams back in the twentieth century. In fact, those of us ancient enough to have grown up in the days before computers were widespread in classrooms at least had the benefit of having practised writing essays by hand for years, so we were used to the ordeal. I suspect that today's fifteen year olds, when asked to abandon their devices and write several pages by hand, must feel the same way as we would if someone took our washing machines away and replaced them with a dolly tub and a mangle.

False logic

Schools are continually under pressure to raise standards. Surely the extra burden of writing exams by hand is counterproductive to this? We wouldn't expect Sir Bradley Wiggins to give his peak performance on a penny farthing. How can we expect our students to produce their best work when they are hampered by a slow and physically demanding medium?

No doubt there are traditionalists who would bemoan the demise of the traditional craft of handwriting, but then the same was probably true when copperplate script or clay tablets fell out of favour. Of course, I would not advocate that children should not learn to write by hand at all – even if for no other reason than the fact that learning to write is an important part of learning to read – but I would also urge that handwriting be used appropriately, when it is the most suitable method of writing for the purpose.

Think first

Another argument that has been used to support the use of handwriting rather than computers in exams is that handwriting tends to encourage students to plan their answer as a whole before writing, whereas typists are more likely to launch straight in and then edit later. There is no conclusive evidence that either method reliably elicits better answers, however – and if it were shown that planning first produced superior results, then why not teach that as part of general exam technique?

Spend to save

Unfortunately, technological solutions always come at a financial cost, and it is obvious that most schools are not in a position to buy new laptops for all their year eleven students immediately, so this should be a medium term goal rather than a sudden change. Looking at the system as a whole and in the long run, though, the cost of new technology would be offset to a large extent by the savings gained by removing the need to print and transport hundreds of thousands of exam papers every year. Perhaps one day the exam boards will find that it is cheaper for them to subsidise the necessary technology than it is to deal with the vast quantities of paper involved in traditional exams.

It's something to consider, at least. But now, alas, gentle reader, my candle grows dim and I must put down my goose feather quill and seal the scroll with wax in time to catch the last carrier pigeon of the day; so I bid you farewell.

ABOUT THE AUTHOR

Guy Snape is a music teacher, writer and photographer. He lives in Cambridge with his wife, two children and their cat.

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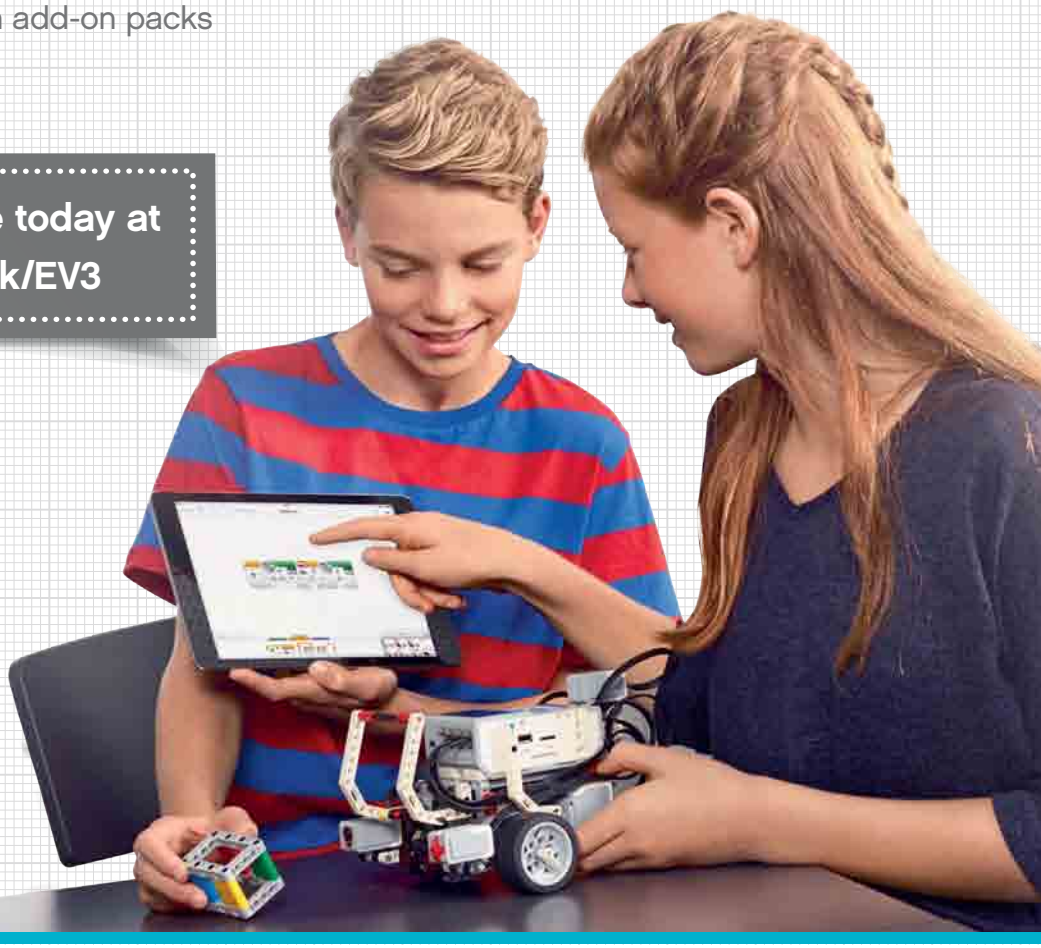

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