

# Technology and learning

We look at five great school projects which bring the latest technology into the classroom. These creative teachers have made maths, bricklaying and 16th century literature accessible to the Bebo generation - with their lateral lesson planning.



## iPhones in class

All teachers hate mobile phones – so why did Gumley House secondary school give out free iPhones? Steve Levinson reports.

**T**he classroom ideal would be for every student to have a laptop – for word processing and research. But countless school laptop projects have failed – because kids download bugs, break them and lose them on the bus.

But Apple's iPhone could be the portable computer schools have been waiting for.

The gadget is famous for its chic design. It was voted Time magazine's best invention of 2007 and listed it in the top five best gadgets in 2008 and 2009.

What really sets the iPhone apart is its function as a platform that can



support applications ('apps') – short, cheap pieces of software that can be downloaded on almost any subject.

The possibilities seem endless – to date, over 100,000 apps have been written.

Some 33 million people in more than 80 countries own an iPhone – or does it own them? Its alarm will get them out of bed, then they use the news, find out if their train is on time, check the weather, play a game, listen to music, Tweet, take a picture and make phone calls. The iPhone does everything – and, unlike the blackberry, people actually aspire to have one! Unlike most of the technology teachers get lumbered with, its simple – and fun – to use.

### The project

The iPhone is used by many working people. But this project is the first time iPhones have been encouraged in a secondary school.

About 30 pupils at Gumley House convent school in Hounslow, London, were given iPhones on pay-as-you-go O2 accounts in November 2009. Girls in years 7 - 11 will be using the devices in class over the next seven months, as part of a trial to understand how mobile devices affect learning.

The pupils had to apply to get a phone with an essay on what they'd use it for. Only students the teachers thought would really experiment with the phone – and were responsible enough not to lose or break it – were given one. Each pupil was also given a £15 iTunes voucher to spend on any apps they chose.

The trial was recommended by education expert Professor Michael Gibson after a two-year research project. Brentford City Learning Centre partnered with Academia Ltd, an education software provider, to fund it. A website has been set up to gather parents', pupils' and teachers' opinions.

### What's happened so far?

The results from Gumley House have been surprising!

"The girls are already downloading applications for document management, translations and anatomy", said Stephen Byrne, the assistant head teacher at Gumley House. "We are offering monthly



prizes for the pupil who uses apps in the most creative way. It's all about embracing the technology – not outlawing it. We hope this will minimise the 'text-under-the-desk' culture in our school!"

One student with infantile arthritis has noted an improvement in her condition. She no longer has to carry heavy books – and prefers using one finger to type on the iPhone than using both hands on a keyboard. Pupils have said instant internet access makes their bus ride homework time.

The impracticalities so far have been minor. One phone had a faulty camera function. Another pupil got a warning for excessive downloads – because she was watching too much TV on her phone. (At Gumley House, students who abuse the privilege by using their phone for non-academic purposes have it re-assigned to another pupil.)

The school decided not to restrict apps, though. The study is trying to find out which apps naturally attract pupils and how they aid learning.

### Pupil feedback

The feedback has been overwhelmingly positive. Emma Hardy, a year 10 pupil, said: "I've

really enjoyed having the iPhone. So far I've just downloaded the free apps. I've been using Quick Graph for maths and a periodic table app for chemistry. I've also downloaded a tube map!"

Students have told us about iword (an online dictionary) Bible (an online bible) and YouTube (a home video website). They have used Red Laser – which scans a shop item's barcode and gives online prices and information – to save £25 between them.

3D Brain shows how the sections of the brain function, with 29 interactive 3D diagrams. Nasa offers the latest news, images and videos from the space programme.

Touch Chords teaches chords on an interactive guitar.

GPSmission allows students to plot points on online maps – which was useful in a school biodiversity experiment.

Quick graph plots equations into 2D and 3D graphs. Myhomework helps students get organised. Translators gives text and audio translations in several languages. Many students have also used their iPhones as remote controls – using their wi-fi connection to control slideshow presentations.

### What's next?

The success of this trial would be hard to recreate elsewhere. Only responsible, eager students were given the iPhone at Gumley House. A whole school roll-out would likely fail.

But in this pilot, iPhones have given bright students the opportunity to pursue their interests – discovering for themselves a range of creative learning tools. It's frightening how useful the phones are – to some information-addicted users, they are a life support device. They allow not just students, but everyone in the world, to pursue personalised learning 24 hours a day – and they've changed life as we know it.

**Steve Levinson is an education and ICT writer.**

# Faking Facebook!

Now that there's a GCSE in 'Digital Communications', teachers need social networking sites as learning resources. ICT teacher Russell Webley reports on his project which uses imaginary Facebook profiles to uncover the damages of online information.

**T**he growth of social networking sites - even in the last five years - has been phenomenal. Today, you will be hard pressed to find a teenager who has never used a social networking site. But not all teachers are as keen - not only are they not as confident using Bebo, they know total freedom of information can be dangerous.

Facebook is currently the biggest social networking site - with more than 350 million users worldwide of all ages. Too some young people, it's as indispensable to their social life as their mobile phone. This level of engagement offers teachers a great opportunity in any curriculum subject - not just ICT lessons.

Schools across the country are missing out on this opportunity by banning social networking on school computers. While it's easy to see why social networks can be a distraction in lessons, this is an enemy that has to be embraced.

Simply banning social networking is not going to keep young people safe - they can access them freely at home. Ignoring social networks doesn't help young people at all - you can't stop them going online.

It is therefore vital that we teach young people how to safely make the most of new media. Giving a lecture on e-safety isn't going to interest anyone, though. Teachers need to engage their students - by getting them to see how the issues affect them.



still a good opportunity to get pupils researching cultures and locations on Wikipedia and Google maps.

Each group then sets up a Facebook profile for their new student - filling in the 'info' section and uploading the composite photo as a profile picture. It is important that the pupils have free reign over what they upload and how they use Facebook's privacy settings.

We create a group for the 'new students' to chat. As these are fictional characters, many groups get carried away with what they share.

After the groups have interacted with each other, there is a perfect opportunity to discuss some of the issues that could have arisen were the 'new students' real. Through this fictional profile, we can look at real-world examples of situations that arise when using social networking sites - without having to use students' personal experiences.

First we look at what information the groups have included on their profile, what they have said in conversation and whether they considered using the security

## The project

At Southbank international school, we run a project with 'grade nine' (year 10) on online safety every year. It explores preventing identity theft, the dangers of virtual relationships and cyber-bullying.

Working in groups, students use digital cameras to take pictures of each other to upload. Using Photoshop, each group is then asked to invent a 'new student' - a composite of the images of themselves. We then ask the students to come up with a name, background and identity for the new student. At our school, we have students from all over the world - so my students often enjoy choosing an exotic nationality. But in a non-international school this is

settings. Even giving away basic information like your date of birth, school or holiday plans can be dangerous if shared with the wrong people.

We then discuss the fact that these 'students' are completely fictitious - which emphasises that it is difficult to tell who is really behind a profile. A 14 year old girl could as easily turn out to be a 40 year old man as a group of school children in an ICT class.

However, it is not only interaction with strangers online that pupils need to consider. Bullying is always a problem - but the threat of cyber-bullying is growing and is more

subtle, particularly as it can be difficult to spot. It can be much easier for bullies to taunt their victims through anonymous messages than face-to-face.

Young people need to realise that once you put something online it is very difficult to take it back - and that it is very difficult to tell tone of voice in typed text. Something meant as a joke can be taken literally and appear threatening. In conversations between our new students, we can see how online text can be viewed differently by different people and can end up being harmful. It is vital to consider others online.

### Repeating the project

All teachers could use this model to discuss internet safety. Facebook is free to sign up to, and you can create as many profiles as you like. If your school does not have access to digital cameras or Photoshop, you could use a stock photo from Google Images.

By creating an engaging, and, hopefully, fun activity which brings privacy issues to life, I hope my students will remember our discussions whenever they use social networks and digital media.

**Russell Webley is the director of ICT at Southbank international school.**

# Roméo! Roméo!

How classtime video conferencing made studying Romeo and Juliet – in French! – easy.

**M**any schools use ICT to build international links. But Ricards Lodge high school for girls, in south west London, has gone one step further. Key stage four pupils at the school are collaborating with a Parisian school to rehearse plays by Shakespeare and Moliere via web cam and Skype. The students will perform their plays in London and Paris in June.

### How did it happen?

The project came about through the school's partnership with College Colette in Sartrouville, a Parisian suburb, forged at a Special Schools and Academies Trust (SSAT) conference in 2009.

Sarah Sawyerr, the assistant head at Ricards Lodge, and Ninette Mostefai, the head of modern foreign languages, developed a project idea with College Colette's English teachers Celine Le Marec and Ludovick Ballester.

They wanted their students:

- To explore foreign cultures
- To become aware of their European citizenship



- To discover literature from different cultures
- To develop international friendships

At College Colette, 23 boys and girls from a fast-track English set were chosen to take part in the project.

In London, the project generated massive interest among year 9 and 10 students - so only students studying both French and drama were allowed

to audition. Candidates were asked to perform the balcony scene from Romeo and Juliet - in French!

### Planning the lessons

Sarah explained: "We chose to study Romeo and Juliet because it's a classic which transcends boundaries. And on a practical note, there are no copyright issues with Shakespeare! 'L'Ecole des Femmes' is a classic French text from one

of Shakespeare's contemporaries, Moliere."

To begin the project, the students were put into pairs - one from each school. Sarah remembers: "A lot of our girls didn't want to be partnered with boys! But it hasn't made any difference."

The students were asked to write a profile about themselves to give their partner. The French students wrote in English and the English students in French. The partners are now regularly in contact about the project and use the internet to swap ideas.

Web cams are set up during rehearsals - which take place after school and in day-long sessions - so the students can watch each other and advise on pronunciation. They can also report on their own progress - with sets, costumes and characterisation.

Sarah said: "I think these students have the advantage of growing up with Myspace, FaceBook and Twitter - they are used to remote relationship building. They took to it like ducks to water.

"We began studying the plays in September. We are studying Moliere while the French school studies Romeo and Juliet. We're hoping to do a teacher swap - where Ninette and I go to Paris to run a Shakespeare masterclass.



"This summer, we will put on a joint production of the two plays - performing them to each other via webcam and live in London and Paris."

The French group will visit Ricards Lodge in March. It was the first time the two groups met face to face.

Sarah said: "We really want to take our students to France in May and we have applied for funding from the Youth Opportunities Fund. But it's expensive - these days, we can't just place students with a French family because CRB requirements on an international level are too complicated. I would advise any school considering this project to secure funding for trips before raising everyone's hopes."

The project has been a challenge, Sarah admits. "Translating a play is quite tough for GCSE. But it's worthwhile - not just in language terms, but for everything the girls are learning about French culture."

### The Key

The project at Ricards Lodge was so innovative it was featured in a case study by 'The Key' - an independent national support service for school leaders - [usethekey.org.uk](http://usethekey.org.uk).

The Key supports school leaders by showcasing best practice ideas from across the UK and providing expertly researched answers to questions on school management issues.

Fe McKerrell, a researcher at The Key, said: "This project is highly innovative. It makes great use of technology to deliver an authentic international experience for students."

### The balcony speech - in French

Ô Roméo! Roméo! Pourquoi es-tu Roméo? Tu serais Paris je t'aimerais, je t'appellerais mon abricot. Rentre chez toi Roméo avec ta face de pet où je ne serai plus une Capulet.

**Catherine Allan is a writer and researcher on e-learning**

# Virtual workplaces

The VIBE' is a series of 'virtual world' software - which can give 14-19 diploma students workplace experience. Liz Forrester, from the Specialist Schools and Academies Trust (SSAT), explains

In my work, I talk to teachers every day. I've found that diploma teachers are struggling to give their students enough hands-on, industry experience - which they expect on a regular basis. Getting students work placements can be very difficult for teachers - not all local

businesses are interested.

At the Specialist Schools and Academies Trust (SSAT), we dreamed up a solution - we needed to develop virtual learning resources to recreate workplace scenarios. To do this, the SSAT partnered with the university of Salford's Virtual Environments

Technology Solutions (VETS) unit. The unit, led by Paul Welshman, already created virtual worlds for training.

The partnership consulted with diploma teachers to find out what kind of scenarios were needed and what skills the exam boards expected. We also consulted with professionals



- to ensure the virtual worlds reflected industry.

In 2007, we piloted the VIBE using the 'construction and the built environment' software at Wellacre technology college.

The result was 'the VIBE' – a virtual reality software which allows 'creative and media', 'construction and the built environment', 'society, health and development' and 'engineering' diploma students to experience the workplace they want to enter. Each software comes with a set of activities to complement different curriculum units.

### How does it work?

Practitioners can use the VIBE 'construction and the built environment' software to take learners on an interactive journey through the layout, management and day to day tasks of a building site. The resource focuses on the 'creating the built environment' unit - by requiring students to complete brickwork

exercises. Other activities – like the health and safety induction or risk assessment task – encourage personal learning and thinking skills.

It is aimed at learners studying at level two (advanced). It addresses units five (using tools) and seven (facilities management) of the qualification.

The VIBE 'creative and media' software is aimed at learners studying at levels one and two.

It's a 'creative virtual village'. Students can experiment with lighting in a theatre, designing a poster in an ad agency, mixing tracks in a recording studio and organising a gig at a concert venue. They can find out about the different jobs in the industry – learning what it's like to be a freelance artist, a copywriter or a graphic designer.

Learners gain an understanding of how integral the creative and media industries are to a thriving cultural community.

The VIBE 'engineering' software is aimed at level two (higher) learners

studying unit one – 'the engineered world'. This unit covers topics and materials which are difficult to imagine in practice.

Learners investigate how technological innovations and environmental designs influence the society we live in. They can also watch video interviews with engineering professionals.

The VIBE software for 'society, health and development' students is aimed at level two (higher) students studying unit six – 'antisocial and offending behaviour'. This unit is particularly challenging. Confidentiality issues make it difficult to find case studies - and councils can't let untrained work experience students handle these cases.

The software takes students to the virtual town 'Sandford' – where they can watch court trials and social workers handling imaginary cases.

### How do you use the VIBE in class?

The VIBE can be used in whole class teaching, group work and individual work. It does not replace real life experience – but it complements them by allowing learners to access hard-to-reach settings regularly. For example, it can be difficult to take construction students onto a building site more than once a term. However, with the VIBE they can do it every day. This creates familiarity with the environment – which can help students when they eventually get an apprenticeship

When used with a class on an interactive whiteboard, the VIBE can provide an introduction to a topic, prepare learners for a workplace visit, stimulate classroom debate or facilitate revision

As a tool for group work, the VIBE can be used to demonstrate different group member roles and explain teamwork.

When you buy the VIBE, you get a free half day of teacher training - which covers all elements of using VIBE in the classroom. Forums on the VIBE website - [ssatvibe.org.uk](http://ssatvibe.org.uk)

- also allow users to share ideas and resources.

All the VIBE software teaches Functional Skills. Learners' work in the virtual world can be stored - to build a personalised electronic portfolio.

The VIBE also comes with an 'editor' - a function which allows teachers to upload tasks, resources and content into the VIBE environments.

The VIBE software is updated every year to ensure it stays in line with the

latest curriculum and technological developments.

Government policy is demanding that practitioners become 'facilitators' for learning - rather than knowledge gatekeepers. The VIBE encourages this - in the virtual worlds, teachers are guides helping students find their own answers.

The VIBE helps students test drive a career- to find out if they like a workplace before joining

it, and learning the standards of professionalism expected from them.

### What's next?

A resource for the diploma in IT is scheduled for release in early 2010.

**Liz Forrester is the VIBE programme manager at the Specialist Schools and Academies Trust.**

# Maths games

A new website uses computer games to make maths fun for 11-16 year olds. Founder Toby Rowland explains.

**N**o exercise in number crunching can alter the sobering fact that UK maths standards are at an all-time low.

UK students now rank 24th in the developed world in maths proficiency, according to the PISA international league table. What's more alarming is that they are slipping even lower in the world rankings. Preparing for the future is grim when children are unenthused, if not ill-equipped, about the kind of maths required to address digital age challenges.

"To upgrade the UK, we need kids who are fired up and fluent in this mathematical code," Dr. Marcus du Sautoy, maths professor at Oxford university, wrote in Wired magazine in November 2009.

Marcus and I are among a group of mathematicians, educators and games industry veterans who have teamed up to find a solution to the maths crisis - in the unlikely arena of video games. Mangahigh - the first curriculum-compliant, games-based learning site to focus on maths for secondary school students - is our collective response.

When we launched **mangahigh.com** in September 2009, we wanted to present students with games that teach them to grasp and practice a range of sophisticated maths concepts. We prioritised the educational



component of the games - they cover everything from Pythagoras to quadratic equations.

Although the games primarily help kids master the maths curriculum, they also contextualise maths by demonstrating its uses in practical situations.

In the game 'Ice Ice Maybe', students hone their estimation and approximation skills to help penguins hop between icebergs and avoid killer whale-patrolled waters. In 'Pyramid Panic', players must master the full spectrum of geometry skills to assist in a Mummy's escape from his tomb. And in the fast-paced action game 'BIDMAS Blaster', the use of brackets, indices, division, multiplication, addition and

subtraction is key to the destruction of the Roborators that run amok. Mangahigh reinforces skills through repetition, whether the students are blasting meteors or raising flowers. These games are supported by Prodigy®, the world's first adaptive maths learning engine for key stages three and four.

The games can all be used for free on the website. But for about £9 per student per year, teachers can get the 'school package' - which includes print out worksheets and statistics of your student's progress.

Marcus du Sautoy has criticized the British maths curriculum for shying away from more challenging concepts. There's also a problem with how

maths is being presented to students. Primary school maths is adequate in part - because it uses numbers in an exciting way. But the secondary maths curriculum isn't quite as inspiring - it's like learning musical scales without being able to play the music.

Standard teaching materials are failing to excite children about a subject that deserves their attention and can be fun. Students are bored and disinterested in the maths that will equip them for life.

## How Mangahigh was started

I first thought of Mangahigh when I was at King.com. I watched millions of players sharpen their game-playing skills on the site, and I saw that if this same motivation could be brought to maths education, it could be a game-changer.

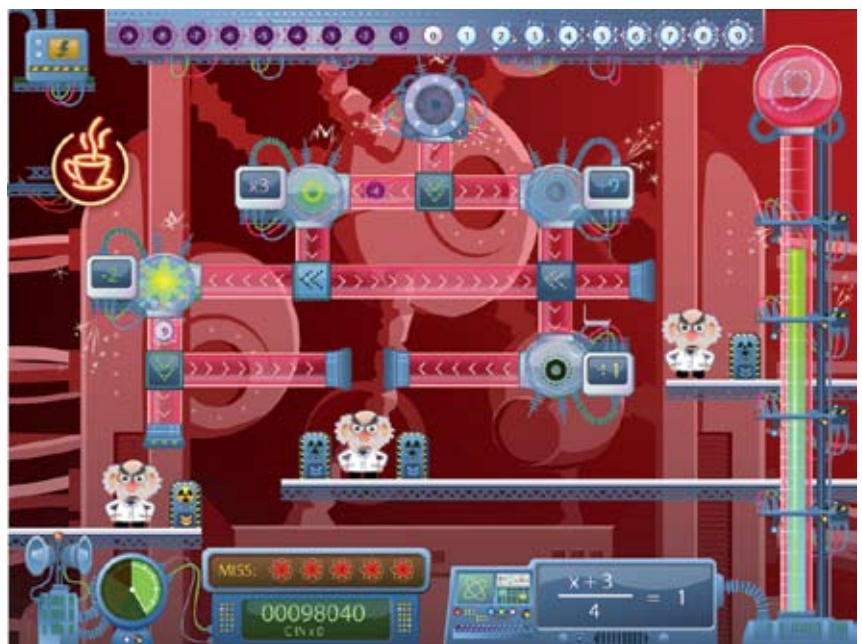
I approached Marcus, who I had met as a student at Oxford, about finding a way to use the skills developed in playing computer games. Marcus has a track record of making maths accessible to a wider audience, through his weekly newspaper column 'Sexy Maths' in the Times. Marcus immediately saw Mangahigh's potential because, like many parents, he had observed his son's dedication to games on the internet and on the PS3.

Marcus agreed to help us develop games where challenging maths is an integral part of the package. Now the Chairman of Mangahigh's Board of Advisors, he is an important source of inspiration and thought leadership for the company.

We were convinced that a key to getting students excited about maths was to present it in an entertaining way. We knew the game had to be commercial quality. We gave Mangahigh its manga theme in homage to the style of Japanese illustration that is so popular with teenagers at the moment.

## Case study: Featherstone high school

Mangahigh is now beginning to see quantifiable results. At Featherstone high school in Southall, London, a group of 90 year nine pupils



of mixed ability recently used Mangahigh over a two-week period. Before the study, the children spent an average of 3.5 hours per week on maths at school and home.

Those same students reported studying four hours per week during the case study. Their confidence rose and 85% improved their maths skills using Mangahigh. About 93% said they would enjoy maths more if they regularly played the games on our site.

"The response has been overwhelmingly positive," said Neil Bradford, Featherstone's deputy head and head of maths. "The blend of

gaming technology with the learning and re-enforcement of mathematical skills is quite superb. The product has proved hugely popular with students, many of whom have been lured into answering more mathematical questions than we could ever have hoped with a textbook approach."

As the most diehard gamers at Mangahigh say: the only way to achieve the high score is by doing the maths.

**Toby Rowland is the CEO and founder of Mangahigh.com, the first curriculum-compliant maths games site for 11-16 year olds.**