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Top marks for technology in the classroom



IT investments are often sacrificed in tough economic conditions. Fortunately the education sector looks set to be relatively protected from the slowdown, with the government keen to keep Britain a world leader in education technology.

Nonetheless, those handling technology spending in schools and colleges are being urged to maintain a tight control on costs, and move sustainable computing up the educational agenda. The knock-on effect will be felt when planning hardware and software upgrades, with a new emphasis on green computing and cutting energy costs.

All of which can be overwhelming for school IT managers and those managing investments, and it helps to draw on the collective experiences of others who face the same challenges.

In this year's special BETT show supplement, EducateIT looks at a number of ways your school or college can make better use of hardware and software to ensure you're getting the most out of the technology that's become prevalent in the classroom. And we've teamed up with education technology website **EduGeek** to provide advice from techies who face the same challenges as you.

We hope you enjoy this issue of EducateIT. Once BETT's over, head to edugeek.net to discuss these topics further with thousands of other people, who, like you, work in the education technology sector.

EducateIT

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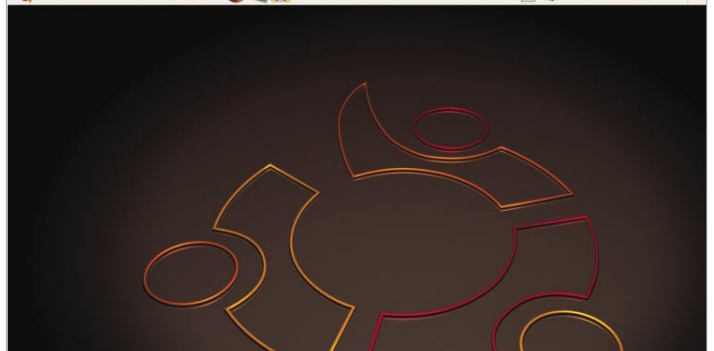
Paul Trotter



IT SUPPLIERS: SHAPING SCHOOL IT

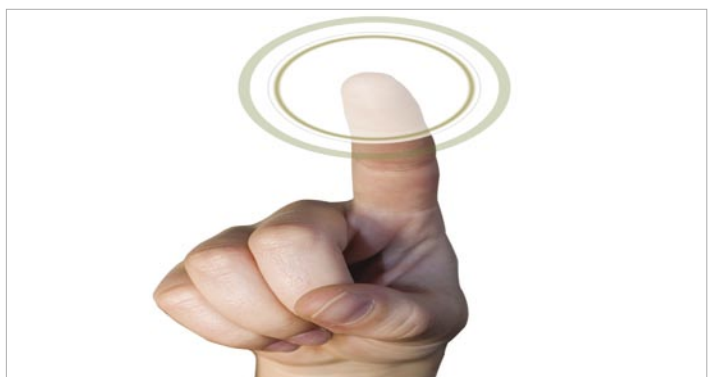
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Windows 7

SET FOR RELEASE THIS SUMMER

Can Microsoft's next desktop OS right the wrongs introduced in Vista?



The first beta version of Microsoft's next operating system (OS), Windows 7, will become available in January, when the software giant hands out copies to attendees of the Microsoft Developer Conference to be held on January 14.

Windows 7 was first shown to techies at the Professional Developers Conference in October. At the event, Microsoft walked attendees through the highlights of the new OS: better performance, an improved user experience, and some nifty media-sharing features.

The widespread availability of Windows 7 has fuelled speculation that Microsoft

is planning to release the OS earlier than anticipated, with many predicting customers will be able to get their hands on the product by the end of the summer.

Research firm Gartner has predicted that Microsoft will ship Windows 7 in time for the 2009 holiday season, which would require shipment to take place around August 2009.

Gartner analyst Michael Silver expects that Microsoft will try to differentiate Windows 7 from Vista by keeping hype to a minimum and then delivering earlier than anticipated.

"If they don't give a date, it's harder for people to say they were late," Silver said.

Such a move would mean Microsoft faces a tricky balancing act in 2009 as it attempts to phase out the popular Windows XP while boosting demand for Windows Vista and building anticipation for Windows 7.

Compounding this challenge is the fact that Vista has been Microsoft's most embattled operating system, and not proved popular in businesses and schools. Although recent reports suggest Vista has improved over the past year, there are also indications of a growing indifference from users.

Many are sticking with Windows XP for now, or even requesting to 'downgrade' to XP with new computer purchases, with the

hope that Windows 7 will be more nimble and efficient than Vista.

So far, the hype surrounding Windows 7 has been kept to a minimum by Microsoft, in an effort not to repeat the over-hyping that created false expectations ahead of Vista's release two years ago. Playing it cool with Windows 7 will also give Vista some breathing room as Windows XP slowly becomes less prevalent.

The low-key marketing of Windows 7 is a smart tactic, said Michael Cherry, analyst with Directions on Microsoft. However Cherry warned that Microsoft should not become standoffish about the value of Windows 7.

"They are being much more low-key in discussing the features of Windows 7 to put the Windows team in a position where they have under-promised and hopefully can over-deliver," Cherry said. "But Microsoft has to begin to share information with partners and customers to help reduce any potential compatibility issues."

Although Cherry believes Vista is not as bad as its reputation, he thinks that with Windows 7 Microsoft needs "to do a better job of telling customers what hardware they truly need to run the OS, and they have to be able to articulate the value of upgrading to both consumers and businesses".

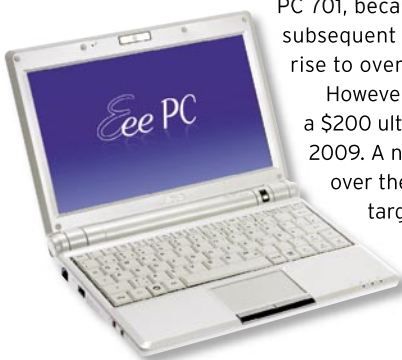
Asus promises £130 Eee PC for 2009

Asus has announced plans to release a \$200 (£130) netbook this year, two years after it announced the first Eee PC at Computex 2007 with the promise that the mini laptop would be available at that price point.

When the first Eee PC, a Linux-based laptop with a 7in screen called the Asus Eee PC 701, became available in 2007, it was priced at £209 and subsequent netbooks from other laptop brands have seen prices rise to over £400.

However, Asus is now promising to deliver on its original plans for a \$200 ultra-portable, ultra low-cost laptop in the first quarter of 2009. A number of laptop manufacturers have launched netbooks over the past year, and some suppliers, including RM, are targeting them specifically at schools.

RM sells a version of the Eee PC called the RM miniBook, which is smaller and lighter than many textbooks and therefore easy to carry to and from school.



Xerox takes on ink pollution

Polluting ink cartridges could be a thing of the past with the launch of new hard ink technology from Xerox. The company's solid colour blocks are used instead of toner and inkjet cartridges in its Phaser 8560, 8860, 8560MFP and 8860MFP printers. Xerox claims that less waste goes to landfill as a result of ink block manufacture and use.

Recycle your school's old printer at point of purchase and Printerbase will offer you a discount. www.printerbase.co.uk



Intel's touchscreen Classmate laptop targets students

Intel is launching a next-generation Classmate PC which includes a swivel touchscreen

Intel's new convertible Classmate PC, on show at the Consumer Electronics Show in Las Vegas last week, is a tablet PC with a touchscreen that swivels to make data input easier.

Intel bills the Classmate as an educational laptop for children in developing countries, but it will also be available in the general market. The touchscreen interface makes software more interactive and easier for younger children to use, Intel said.

The Classmate is a reference design created by Intel, but the laptops are actually shipped by PC makers throughout the world. Laptops built using the reference design will become available in early 2009.

The new laptop has a clamshell design with an 8.9in screen. Input of data can be done either through a stylus or by touch. There is an option to rest palms on the touchscreen while inputting data.

The laptop has a number of other bells and whistles, including an accelerometer that changes the display's orientation horizontally or vertically depending on the laptop's position. The convertible Classmate will run on an Intel Atom processor and come loaded with either the Windows or Linux OS.

With the new Classmate, Intel is a step ahead of its prime competitor, the XO laptop from One Laptop Per Child (OLPC), which plans to offer a touchscreen interface in its XO-2 laptop, due to ship in 2010. The XO-2 will include a software-based, touch-sensitive keyboard and two touchscreen displays.

Intel has seen success with its Classmate PC range. Last year it announced it would ship about 500,000 Classmates to basic-level education students through the Portuguese government.

'Ethical hacking' course helps IT pros

A UK school has launched an 'ethical' hacking course that's designed to help IT administrators protect networks.

The International Correspondence School (ICS), which offers home learning, said the course will enable IT professionals to have a better understanding of hacking so that they can protect their own networks more effectively.

Key areas studied include how to scan, test, hack and secure systems, as well as intrusion detection, policy creation, social engineering, denial-of-service attacks, buffer overflows and virus creation. The course is aimed at those already working in IT, and is expected to take six to 12 months to complete. It costs £1,799, and is recognised by exam creator the EC Council.

The ICS said it was "very aware" of the potential dangers of the course. Students are vetted and reference-checked by the EC Council before they are allowed to take the course, "to ensure they work for legitimate companies", it said.

Phil Worms, director at data storage supplier Iomart, said it was vital for schools and other organisations to understand how hacking works: "Long gone are the days of thinking that an internet security policy was 'nice to have'.

"It is now an absolute necessity and education is the single most important weapon that a company can deploy against cyber attack."

A course to prepare for the exam is also available through a range of other schools. Successful candidates so far include IT workers at the Ministry of Defence, Coca Cola and BT.

NComputing turns one PC into 11

NComputing has launched an ultra-low-cost computing appliance that aims to slash the cost of computing in the classroom. The X550 desktop virtualisation kit, which was named as a 2009 Design and Engineering Award honouree at last week's Consumer Electronics Show in Las Vegas, creates multiple virtual desktops on a single PC so that many users can tap the unused capacity and share it as if each person had their own computer.

Each X550 kit includes five NComputing XD2 access devices, a PCI plug-in card, and the award-winning vSpace virtualisation software. Simply install the PCI card and virtualisation software on the shared PC, and then connect the access devices to the PCI card with standard cables.

Finally, connect each user's monitor, keyboard, and mouse to their access device - then six users can enjoy their own independent virtual desktops. Add a second X550 kit and eleven users can simultaneously share a single PC.

"Schools, businesses, factories, and governments worldwide are facing severe budget constraints and the X550 is the perfect solution because it delivers computing access to employees and students at a fraction of the cost of standalone PCs - and with the same performance," said Stephen Dukker, CEO and chairman of NComputing.

NComputing's X550 desktop virtualisation kit is available for £289 from resellers including Academia, Axess, Misco, Akhter Computers, A-2-Z and Ramesys.



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Stuart Whiting
Senior ICT Technician
King Edward VI School



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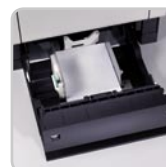
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IT SUPPLIERS SHAPING SCHOOL IT

School IT is set for an unprecedented boom, with billions of pounds being spent on hardware and software. But money doesn't buy success, and the competition to get hardware into children's hands is intense. Steven Bruce explores the possibilities

ICT is taking centre stage in schools, with the government promising to maintain a massive investment programme, and institutions keen to embrace technologies that engage pupils and improve attainment.

While a few exemplar schools are already living the dream of a connected computer for every student, the majority are still waiting. But with suppliers and IT managers eyeing the potential grants up for grabs, school IT is set to boom.

The Building Schools for the Future (BSF) programme, which is intended to revamp or rebuild schools across Britain, will, according to research from Kable, take spending on schools IT from £1.05bn in 2008-09 to £1.29bn in 2011-12. Meanwhile, the government has earmarked a further £300 million to ensure pupils have home access to the internet.

While the ongoing process may not be perfect, the industry sees itself as an unfashionably positive beacon of Britain's development.

"Never forget we are world leaders in educational technology - people come here to see what we are doing," said Ray Barker director of the British Educational Suppliers Association.

"BSF is the biggest schools project in the world, and we are also benefiting from taking an educational focus - it's not just about buying computers, it's about making the most of them."

Of course, money doesn't buy success. To date, programmes to put more ICT in schools

have been a logistical triumph, but IT is still not being used to its full potential.

"It is clear that ICT is firmly on the agenda and schools fully recognise its importance," said Stephen Crowne, chief executive of Becta. "However, we now need to make that next step and ensure schools are using the technology available in an interactive and engaging manner."

The way educational suppliers integrate new technologies with existing products will be critical to achieving that goal. In a world where technology changes more quickly than even the curriculum, that's no mean challenge, but the industry is ready.

"We're helping schools who want to mirror industry practice in their teaching," said Rob Williams, an education consultant at Jigsaw. "We spend a lot of time investigating the curriculum, and responding to initiatives such as the new 14 to 19 Diploma, by trying to keep the technology we offer relevant and current."

Getting hands on

The competition to get hardware into children's hands is intense, with suppliers of everything from PDAs to netbooks and full-scale laptops vying for lucrative contracts. The result is that suppliers now offer computers that are cheap enough to deliver one PC per pupil.

For example, education specialist RM has recently provided Westlands School with a miniBook device - a rebranded Asus Eee PC - that marks a new breed of low-weight, low-

power, low-cost laptop. At around £140, the netbook is light enough to carry around in school bags, yet powerful enough to handle many day-do-day tasks.

"We've experimented with PDAs and with full-sized laptops, but they didn't provide sufficient mobility in terms of resources and it certainly didn't provide the durability we need," said Jon Whitcombe, Westlands' head teacher.

"We like the miniBooks because they are cheap, robustly built and offer lots of things like wireless and ethernet networking. We knew that with a rolling purchasing plan we could afford to give these to all our students within 18 months."

HP, too, is putting lightweight laptops into schools, developing the hardware specifically for the classroom. The Mini-Note 2133's low weight makes it ideal for students, especially as it is ruggedised.

"We made these things different from normal laptops because they have a harder life than a corporate notebook," said Tom O'Kill, education manager at HP.

"The shell is made from strong aluminium in case the bag it's in is used as a goalpost, and there's a protective layer over the screen so that when a compass hits the surface it doesn't damage it."

It's another example of how suppliers are listening to the needs of the market, and tailoring products to suit. However, schools and suppliers need to be aware that, while a unified approach might be simple, the PCs may not meet everybody's needs.



Eee PC 900

RM is aiming a version of Asus' Eee PC specifically at the education market



Epson 1715

Can projectors replace interactive whiteboards in the classroom?

"There is no one-size-fits-all device," said Jesse Westgate, field sales manager for Misco. "A small device might be ideal for years five, six and seven, but older children will want something more powerful and with a larger keyboard; media studies or design students might want a Mac, while maths student might want a tablet PC."

Schools need to take advice from consultants to ensure hardware meets requirements, but the consulting company should not be attached to anyone in the tendering process as that could lead to conflict of interests and break tender procedure rules.

Sideshows prove attractive

Part of the revolution in teaching comes from peripherals that transform the "chalk-and-talk" environment and enhance teaching in more hands-on environments.

Interactive whiteboards have been all the rage, but as projector prices fall, they are finding their way into classrooms, especially in schools where built-in IT infrastructure places tech at the heart of education.

SCHOOLS ARE CUTTING COSTS BY NETWORKING PRINTERS TO BE MANAGED UNDER SOFTWARE WHICH ALLOCATES PRINT COSTS TO THE RELEVANT COST CENTRE

Take the 12,000-student York College, where a centrally controlled audio-visual system gives teachers and students wireless access to a projector in every room.

"We bought the Epson projectors because they offer a central monitoring system," said Martin Harmer, York's information and learning technology manager.

"At the previous college we had only around 40 projectors, but it was a nightmare for the AV technician to maintain them."

Central monitoring means far less work for the technicians, from turning off the EMP-1715 projectors at night to monitoring temperature for an early warning of when filters need changing.

Each teacher in the college has a tablet PC to connect to the projectors which, when paired with Epson's EasyMP wireless

connection, gives them the freedom to present from anywhere in the classroom.

This, say teachers, is extremely handy in less traditional teaching environments, such as the hands-on Motor Vehicle Maintenance and Repair area.

Although the paperless school might be a green dream, the reality is that schools still spend heavily on printing - everything from coursework to fliers for school plays.

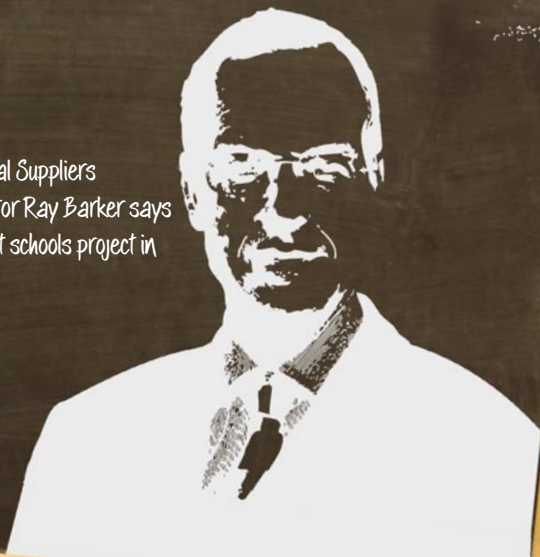
Taking a leaf from the corporate world, many schools are cutting costs by networking printers to be managed under software which allocates print costs to the relevant cost centre.

For example, the AG Group recently rolled out a Canon print management and budgeting system at Longley Park Sixth Form College that linked legacy printers with new >>



Ray Barker

British Educational Suppliers Association director Ray Barker says BSF is the biggest schools project in the world



hp 2133 mini note pc

HP's Mini-Note netbook is designed to be durable for the classroom

THE GOVERNMENT HAS SET THE TARGET FOR ALL SCHOOLS TO HAVE A MANAGED LEARNING ENVIRONMENT BY 2010



models and a software package that made it easier for department heads to see who was printing what via existing swipe ID cards.

Software the driving force

Although hardware looks good in government figures, without the right software many of these investments would simply be wasted. And although there has been progress, software limitations have hampered schools.

With pervasive IT, content is needed to drive pupils' use of the technology across all subject areas. Whereas teachers used to have access to a range of august text books, e-learning tools are only just maturing, and teachers often have to write their own educational material.

Kent school Hugh Christie, for example, had to develop learning resources to suit its requirements because suitable material was not readily available either commercially or from central resources.

"We've developed many of our own resources over a number of years," said Jon Barker, the school's principal.

"We currently have a Microsoft Learning Gateway VLE that is filled with our own content. We supplement this with others. We'd like to see more interactive resources developed. So much is now available open source on the web, but it is finding the time to filter what is good quality."

While content might remain a work in progress, the virtual learning environment

(VLE) framework for making content available to a wider audience is now entering the mainstream.

For example, at the Brislington Enterprise College, students access an online Managed Learning Environment (MLE) called N-able designed by Northgate Education and partners. The software provides a personal learning area for where they can store work, and access support materials and information about their progress.

Microsoft has similar functions built into SharePoint, and with new licensing due to be unveiled at this year's BETT show, it's growing in popularity as a learning platform.

Accessible via the internet from any location, MLEs give teachers a digital toolbox of resources to continually assess pupils' work and offer guidance.

While primarily a learning tool, good learning environment software also includes school-management strands, such as an alert service which informs staff when there may be an issue with a pupil, for example if they have missed a certain number of school days or lessons.

They also include applications including building management systems, library systems, e-registration, cashless catering including nutritional information, and CCTV. The government has set the target for all schools to have a managed learning environment by 2010.

However, schools don't need to spend money to bring virtual learning environments into the classroom. Moodle is a free download that acts as a framework from which learning modules can be hung and is popular with school IT staff.

"We've been running Moodle for a few years now, and have gigabytes of data

and many self-trained staff," said one poster on the Edugeek.net forum. "Our local authority wants us to migrate to its platform, unfortunately they chose one which sucks, and doesn't provide anything close to the functionality, usability or integration that Moodle does."

As the education market matures, software packages are washing down into the various niches left untapped.

Nuance Communications, for example, has recently integrated Dragon's Naturally Speaking voice-recognition software into its Learning Access Suite, which is a collection of learning tools designed to make learning easier for people with disabilities or other input limitations.

"The package sits on top of the VLE and means that everyone has access to the same tools as their classmates," said Mark Green, director of education at Nuance. The features in the Learning Access Suite also help schools meet the requirements of the Disability Discrimination Act.

Building the backbone

Running a VLE requires more than content and user devices - the modern school needs a network that is both reliable and secure and schools are taking a leaf from enterprise technology and buying in expertise to protect mission-critical infrastructure.

While traditionalists might bemoan the decline of in-house IT staff, the arrival of specialist companies with properly trained staff does at least remove the responsibility of running networks from educational administrators.

"Having managed a 1,200-device, 10-server network in-house for several years,



THIN CLIENT COMPUTERS ARE CHEAP AND RELIABLE AS THEY HAVE FEWER COMPONENTS THAN A FULL-SPEC DESKTOP AND FEWER POINTS OF FAILURE



one of our main concerns has been just how reliant we are on people in-post," said Hugh Christie's Barker. "If people move on, it's not always cost effective to replace like for like and with all the various devices employed on the network this is no longer the job of an enthusiastic amateur."

Never be too thin...

When it comes to simplifying systems for administrators, nothing says 'thankyou' quite so succinctly as a thin-client network, which used to be the preserve of the enterprise, but is finding life quite comfortable in the classroom.

The model is scalable and because the client computers are basic, they are both cheap and reliable as they have fewer components than a full-spec desktop and fewer points of failure. With the thin clients locked down, there are also security benefits.

Bootham School in York recently replaced a patchwork of desktops and laptops with HP e90 and m100 thin clients, using HP ProLiant servers running in a VMware H/A cluster.

As in the business world, thin client networks also reduce management time and Bootham said it can unwrap a client and have it working in the classroom within 10 minutes. But that's just the tip of the management iceberg.

A server-based platform means software updates, patches and new packages are all much simpler to install and maintain. Software can be installed to a small number of central servers rather than IT staff troubleshooting issues at each individual PC, while VMware's snapshot facility, also running on the school's central servers, enables IT staff to instantly 'roll back' server

changes should problems occur.

"Windows updates, MSI application rollouts, initial antivirus scans and computer audits are all removed from boot time on our thin clients as important tasks can be carried out centrally on the servers outside of school hours," said Wright. "This was near impossible with our laptops, as many were locked in department cupboards."

There are other benefits with this slimmed-down network appliance approach - including anaemic energy costs.

"We have replaced just over 100 computers as part of our rolling replacement programme," said Wright.

"By deploying thin clients we have moved from 240W devices to 25W devices.

"This is in itself a major benefit in terms of power consumption but also a benefit in that it reduces the future likelihood of requiring air conditioning."

With energy prices sky high, deep networking organisations are also pushing the boundaries on reducing the carbon footprint in school networks.

D-Link, for example, recently released results of independent tests from Broadband-Testing Labs which show the company's ethernet switches can cut 46 percent from related power bills in schools, while still performing at a full-line rate.

The school-home divide

One of the key aspects of the government's vision of ICT in schools is to provide a bridge between the school, pupils and parents. Managed learning platforms are seen as an antidote to apathy, where parents can check up on attendance, make sure children are eating properly in the school canteen, and

monitor academic progress.

The first of the home access schemes rolled out has seen £30m spent on ensuring access to a computer and broadband for nearly 20,000 underprivileged pupils in Oldham and Suffolk. While the access project enables students to work from home, officials hope getting parents involved will improve those life-changing decisions.

"Twynham school has added options to SharePoint to help 14-year-olds and their parents decide which GCSEs to choose," said Ray Fleming, marketing manager at Microsoft Education.

"It used to be a booklet, but now parents and children can view an interactive website. It doesn't just show options; there are also videos of lessons, so students can learn what to expect, they can watch classes and assess 'Should I be doing history lessons or hairdressing?' The whole process pulls parents into understanding what goes on."

This is the crux of the modern school IT system, giving as many people as possible access to the right information and tools to make learning a more interactive experience. It applies to everyone from teachers and parents to the student themselves. Most of all, it applies to the industry trying to modernise the system.

BIO

Steven Bruce is a freelance journalist with more than 10 years' of experience writing about education and government policy.

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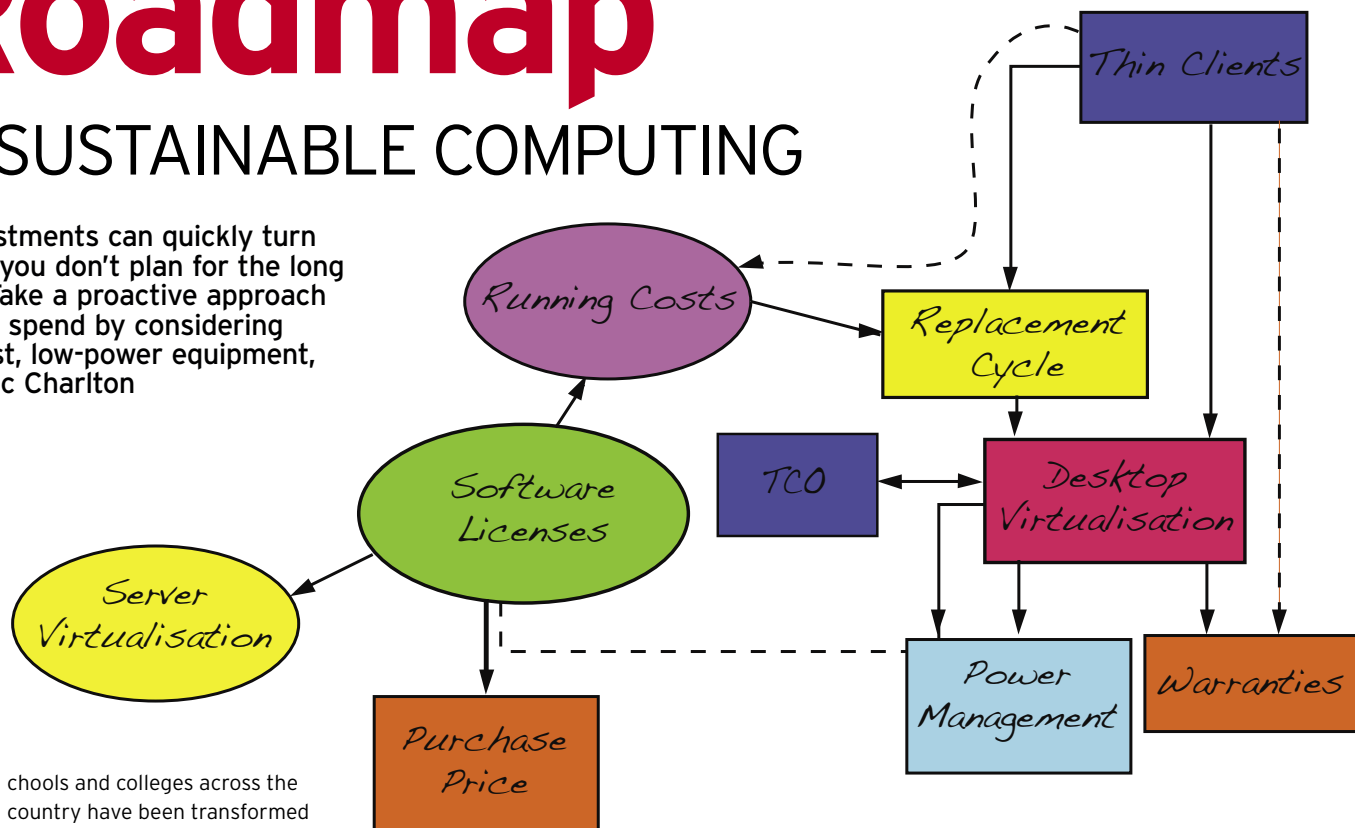
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Roadmap

TO SUSTAINABLE COMPUTING

IT investments can quickly turn sour if you don't plan for the long term. Take a proactive approach to tech spend by considering low-cost, low-power equipment, says Ric Charlton



Schools and colleges across the country have been transformed over the past 10 years by government investment that's placed the UK at the forefront of the educational technology revolution. But with vast sums being thrown at the school network, critics argue that not enough time is being spent on long-term planning.

Many schools are falling into the trap of adding more IT resources without regard to future sustainability, which means trying to support ageing hardware they cannot afford to replace due to tightening budgets. Staff and students then become frustrated with the computing resources on offer, and a general lack of confidence in ICT ensues.

To manage this we need to plan for the future and ensure we adopt best practice for what's known as 'sustainable computing'.

The first thing to do is decide upon the school's priorities by creating an ICT Development Plan that's aligned with the School Improvement Plan and Curriculum Development Plan. Once you have this document, it should be possible to forecast a budget for at least three years, taking into account a hardware replacement cycle and any software upgrades you envisage within that time. An allowance for general maintenance and repair work should also be factored in. At this point it will become apparent that the years of adding to your school's ICT equipment has caused the resources to become unsustainable.

The next step towards sustainability is to reduce the total cost of ownership (TCO) of

ICT hardware and software. This will include running costs, maintenance costs, initial cost and cost of replacement.

Sensible software

By carefully selecting software, you can dramatically decrease TCO. It's important to think about the initial purchase cost, the costs involved when adding additional computers/users and any upgrade costs involved. For instance, it may be worth purchasing a more expensive site licence for a new piece of software rather than having to buy additional licences as you increase the number of computers on site - again, a solid ICT Development Plan should show if this is likely to occur.

As discussed on page 22, open-source software can help reduce costs too and serious consideration should be given to whether it meets your requirements.

For instance, a compelling argument is needed to justify running Microsoft Office over OpenOffice.org when you consider the costs. You may have to spend over £10,000 every three years in an average-sized school just to keep up-to-date with the most recent version of Microsoft's package.

The software costs must also be factored in when new hardware is purchased - that 'special offer' £300 computer can soon become a £500 computer once you have

purchased additional licensing. As more and more software is purchased requiring 'per device' (one licence per physical machine) licences, this extra cost can soon build.

Further consideration should also be given to any software that you may wish to publish on the internet - for example, web-based email or terminal services. Often, software licences are 'per device' only and you will need to purchase licences for every device that may wish to access the service.

Again, a prime example is Microsoft Office (which can be purchased only as a per device licence, Microsoft Exchange also requires 'per user' licences or expensive 'external connector licences').

Hardware headaches

The separation of departments in school can mean that costs such as cooling and electricity can easily be forgotten. As energy prices soar, these factors are becoming increasingly important to schools. Fortunately, here again technology is beginning to lend a helping hand.

Processor manufacturers such as Intel and AMD are competing to produce increasingly powerful chips that use less power. In this way electricity consumption and heat production are kept to a minimum. Within educational environments, where there can be multiple rooms of 30 or more

>>



computers, these savings can become significant. And as mentioned on page 10, low-power processors in thin-client devices can use as little as 3W and produce a negligible amount of heat, meaning air conditioning is no longer needed.

The widespread switch from CRT monitors to TFT monitors has also increased the energy efficiency of computers. These use a smaller amount of power, produce little heat and have far more economical standby modes than their CRT equivalents.

Another way to reduce hardware costs is to use 'ex-stock' and 'second-user' hardware. Companies such as ICT Direct specialise in supplying hardware that's perfectly suitable for the school environment at a fraction of the cost of the equivalent new equipment. For instance, high quality laptops that are six months old are often available for £800 less than the initial retail price. These systems often still come with a two-year warranty.

"We can supply ex-government and ex-corporate, quality-branded business computers for around a third of the price of buying a new PC," said John Graham, Director at ICT Direct.

"Being 'Vista Ready' these computers improve sustainability whilst also giving schools the opportunity of stretching their budgets further."

Graham also pointed out that most tasks performed on a classroom PC don't require bleeding-edge specifications.

"Many school computers use such applications as Microsoft Office. The minimum system requirements for the latest Office 2007 are: 500MHz processor, 256MB RAM and 2GB hard drive space. With our HP base units, we deliver a minimum 3GHz processor, 1GB RAM and 40GB Hard drive. So

Seven simple ways to achieve sustainability

- Set an achievable plan for the future
- Power down systems when they're not in use
- Consider low-power alternatives when buying PCs
- Carefully consider software choice: free and open-source software is an option
- Virtualise servers where possible. This may include all but terminal servers
- Consider desktop virtualisation and thin-client technologies
- Remove/reduce air conditioning within the classroom

it begs the question as to why schools need to buy new computers when they can either upgrade their existing PCs or buy computers from companies such as ICT Direct, which offer excellent value for money."

Thin-client computing

In the past thin-client computing has not been considered suitable for use within education, however improvements in multimedia acceleration and increased server capacity mean that most everyday computing tasks can now easily be accomplished using thin clients.

By doing this, computing power can be consolidated into a central location and low-power devices can be distributed around the school. These lower power devices are generally solid state with no moving parts, meaning that little heat is produced and the replacement cycle at the desktop can be increased to up to 10 years from three years.

The servers used to push the applications to the thin-client devices can generally serve upwards of 30 clients concurrently and will need replacing only on a three-year cycle.

These can then be stored in a central location that's air conditioned, thus removing need for air conditioning in the classroom. Sharing the resources of the server and using low-power client devices can considerably reduce overall energy consumption. There will, however, still be a requirement for small suites of higher powered desktops for graphically intensive and multimedia applications such as CAD, video editing and music production.

Server virtualisation uses a single physical server to host multiple instances of servers that would normally be their own physical machines. This obviously reduces energy consumption and heat production since the number of computers in the server room is reduced.

Fewer server resources are wasted, so that the maximum can be made out of your investment in a piece of hardware. Overall, this also reduces the costs on the normal three-year replacement cycle.

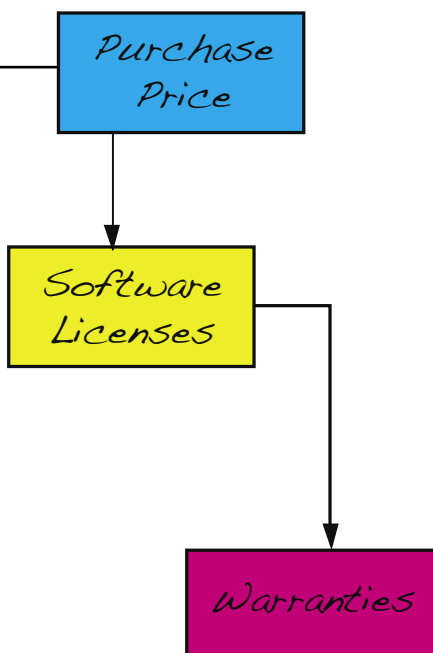
Additional benefits can be gained through server virtualisation, such as increased uptime and increased availability by using technologies that allow virtual servers to be moved between physical machines without downtime. Ordinarily this would require clustering and redundant computing, multiplying running costs.

Desktop virtualisation is a technology that combines the best of thin-client computing with the best of server virtualisation.

Instead of having a number of concurrent users on a single server, virtual desktop PCs are provisioned on the fly so that the host computers' resources are used better, leaving low-powered devices on the desktop. The advantage of desktop virtualisation over thin clients is better multimedia capability and ease of management. Of course, desktop virtualisation is more expensive.

Achieving sustainability

In conclusion, to achieve a sustainable ICT solution, a number of factors have to be considered and a substantial investment is required to move away from the 'normal' client-server computing model. It's important to also remember that there is no one solution and the most sustainable option will inevitably involve a number of those methods described above.



Bio:

Ric Charlton is a school network manager from Lancashire, as well as a site admin for edugeek.net. From this experience, he has grown to understand the important role of sustainable computing in today's educational establishments. Ric is passionate about the use of server-based computing and virtualisation in order to reduce management overheads and TCO.

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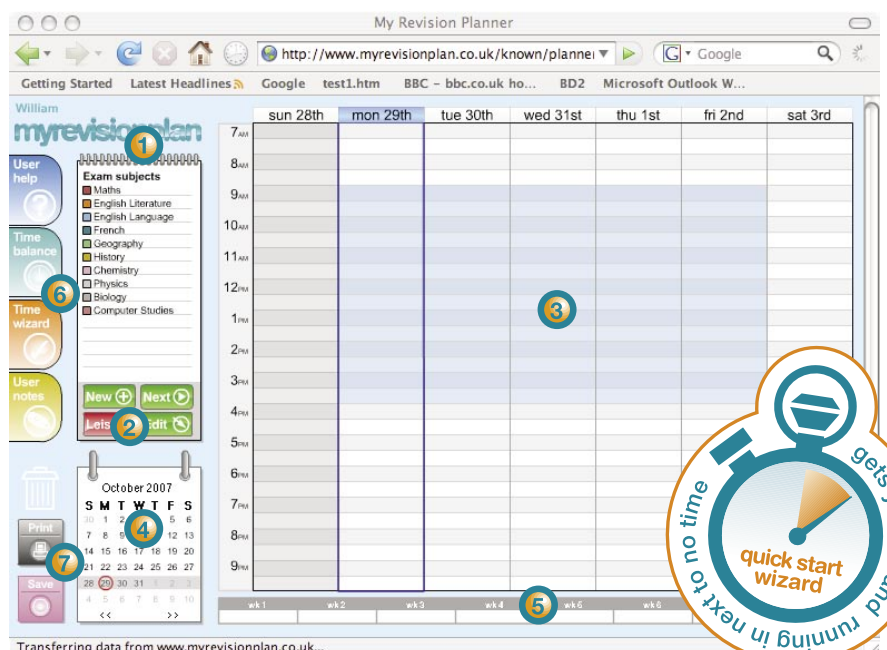
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The right FITS



Ensure technical staff are not left scratching their heads: define roles for everyone in the change-management process

Becta's Framework for ICT Technical Support could change the way you manage IT upgrades, says Tony Sheppard

Becta's Framework of ICT Technical Support (Fits) is derived from the experiences of ICT technical support providers all over the UK. It represents their experiences over the past 20 years.

Many techies in schools are naturally sceptical of broad recommendations on how to implement, manage and upgrade technology. But while Fits gets good and bad press, those who take the time to look at the proposals will find a set of common processes that are applicable to any establishment using ICT. Turn the page for an explanation of the basic principles.

However, before you follow up on any Fits advice, remember that it's only a framework. Fits is intended as a guide, from which you select the areas appropriate for you and your school. You have to adapt Fits to meet your needs.

This article looks slightly further on. We'll examine how change management can be explored in your support team, either as part of school-wide initiative or simply to facilitate internal changes within your team.

ANY CHANGE MEANS INTRODUCING A RISK OF THE CHANGE FAILING OR CAUSING SOMETHING ELSE TO FAIL ”

Fits for purpose?

To explain how Fits could help you, let's look at a few scenarios.

Perhaps you've been working on a new email system, and have just turned the old one off and the new system on. Maybe you've decided you don't want to cough up the cash to upgrade your existing office package and are rolling out a cheaper (or free) version instead. Alternatively, some mission-critical hardware may need fixing.

Each of these examples poses complications. Many users will experience down time, most will need training on the new hardware or software, and all new installations will require rigorous testing. Ultimately, things can go wrong.

Here's what Fits says about Change Management: "Any change means introducing a risk of the change failing or causing something else to fail. Change management is proactive technical support focused on preventing incidents and problems by effective planning."

One of the underlying principles of Fits is that IT staff and management become proactive rather than reactive when making these changes. This has a knock-on effect to roles, responsibilities and priorities.

Getting started: a case study

See the 'Roles explained' (left) for an explanation of who takes on what role in the change-management process. Once you understand where responsibilities lie, you need to start working on a plan to put your particular initiative into action.

Managing change: roles explained

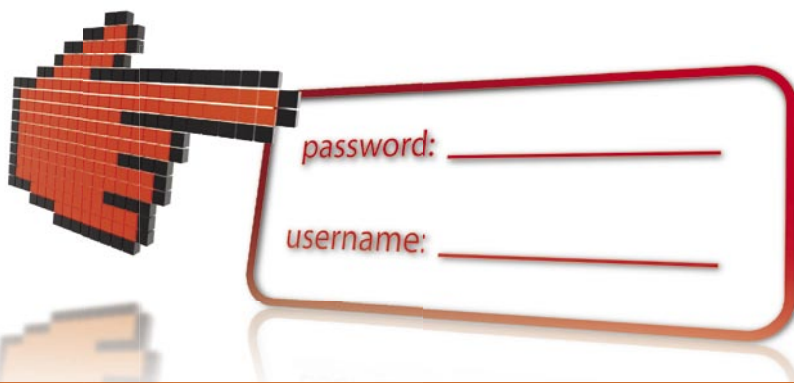
Originator: Responsible for requesting the technical changes. This may be a member of the support staff, ICT co-ordinator, IT manager or supplier. However, it could also be a teacher or an end user. These days, a number of technical changes will originate from the educational needs of students.

Initial Approver: Assesses the cost and value of proceeding with the change. This person may be the IT manager, ICT co-ordinator or a senior leader at the school. The value should be viewed for both technical and educational impact.

Peer Reviewer: Assesses the change and implementation plan for technical suitability and robustness. This may be another member of the support team or supplier. Again, the project should be assessed for educational suitability too.

Final Approver: Seeks the views of affected or relevant user representatives to take part in this decision-making process. This person may be the school's head teacher, IT manager or ICT co-ordinator.

Implementer: Implements the change in accordance with the plan and the scheduled date and time - may be a technician, IT manager, ICT co-ordinator or supplier.



Allowing users to change their own passwords could lighten the load on IT administrators. But using a framework to implement the change could be the biggest time saver of all

Let's take the simple example of forgotten passwords. The IT department receives lots of requests for password changes, partly through a concerted effort to create more complicated passwords, and asking users to change them on a regular basis. The helpdesk and incident management logs show that requests from students for new passwords have quadrupled, and this has been identified as having a negative impact on the performance of the support team.

Teachers have also requested that they're granted access to change student passwords, something they used to have.

So, we have the request, we have the reasons behind the change and we have two solutions: one is the Self Service Password Reset tool (available from edugeek.net) which allows users to set up security questions that allow them to reset their own password. The other is to delegate built-in Microsoft tools to allow teachers to reset passwords themselves.

In this scenario, the originators are the IT support team and the teachers. The initial approver is the IT manager, who clearly identifies this as a way of reducing calls to the helpdesk. At this point a draft implementation plan is written, identifying who the change impacts on, the technical and training requirements, and what communication is needed to end users.

The peer-reviewers are other members of the support team, other local support teams who have had similar issues and the ICT user group at the school. They look at the implementation plan to ensure it's fit for purpose. The final approver is the deputy head who line manages IT support services. This person might also have to sign off any costs. Finally, the implementer is the IT manager who will follow the plan as laid out in the final implementation instructions.

Peer review

All of this seems straightforward. However, in the scenario above I put down two options. So which one was implemented?

Well, during the peer-review phase it was highlighted by one member of staff that teachers are not meant to do any administrative or support work on computers and changing passwords might be construed as such. The IT manager checked with the union rep who confirmed that teachers could not be told they had to do this. However another teacher did say that if it was made available they would be happy to do this as it saved a lot of time.

When the two options were presented to the deputy head - the final approver - he agreed that while some staff might prefer to use Microsoft tools to change passwords, the functionality would then be accessible to those who chose to take a hands-off approach. He expressed concern that teachers not keen on changing passwords may be coerced into doing so. This was deemed unfair so the self-service reset tool was chosen. The IT manager then went back to the peer review group for approval.

When the new system was approved, the deputy head signed off a small test network that could be used to trial the process.

The IT manager set up the network, got everything running within two weeks, then wrote up the training materials and documentation to go with the service.

Over half a term it was rolled out on to the main network and the school website was updated with instructions. Every time a user came into the support team to have their password reset they were shown how to use the self-service tool.

After three weeks password requests dropped and fewer students left lessons to have their passwords changed. In total the whole process took 12 weeks, from initial request until final report.

That's just one example of managing change in your IT infrastructure by following Fits proposals. Hopefully, you can see that such procedures are easy to follow. Change management doesn't have to be as wide ranging as the example here, so the next time you patch your laptop, try to apply these principles to see how easy that are to follow.

What is Fits?

The Framework for ICT Technical Support is based on the IT Infrastructure Library (ITIL) - which is regarded as a best practice guide for IT services.

ITIL is derived from the collective experiences of ICT technical support providers all over the UK during the past 20 years. The aim is to collate that experience into a set of common processes applicable to any establishment using ICT. Becta has applied these principles to schools, and Fits is designed to enable you to bypass common mistakes and implement processes successfully.

The emphasis of Fits is on proactive tasks. It views technical support not just as a function responsible for resolving incidents, but as a service provider whose main objective is to prevent incidents.

According to Becta, the main benefits of Fits include:

- Guidance based on tried-and-tested processes that have been adapted with schools in mind.
- Simplified, ready-to-use processes that can be used immediately.
- Templates, checklists and downloads that can be used as they are or be personalised for specific users.
- A quick-start approach to help you make the best use of your time and resources.
- Helps keep costs to a minimum.
- Protects teachers from having to get too involved in technical support.

For more details about Becta's Framework for ICT Technical Support, go to www.becta.org.uk/fits

BIO

Lodge Park Technology College has kindly let their Director of IT, Tony Sheppard, go on secondment for 12 months to Northamptonshire County Council in the role of 'Technical Manager, ICT in Schools, Children and Young People's Directorate'. His role involves helping schools implement Fits. Tony is also involved in the development of the county Learning Platform provided by LP+, and part of the county team working with EMBC on safe and secure broadband provision for Northamptonshire schools and other educational establishments. Tony has been Events Organiser and a Site Admin for EduGeek.net for the past three years.

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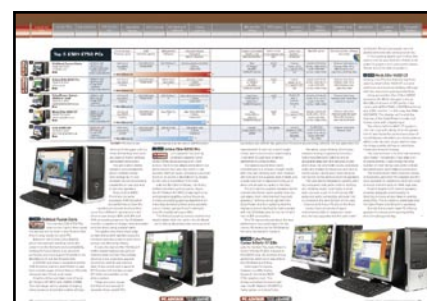
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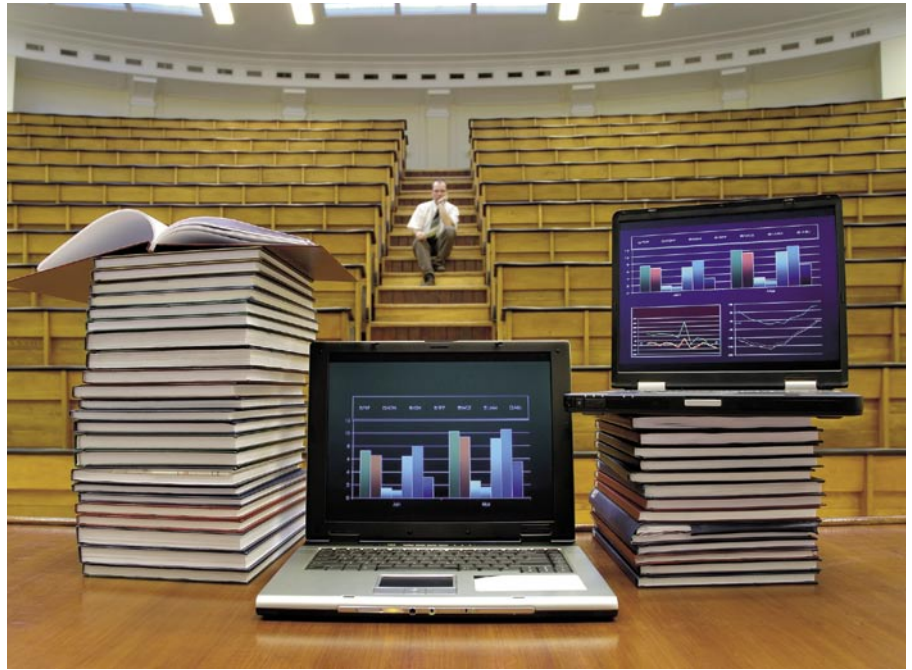
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REAL-TIME REPORTING IN THE CLASSROOM

Can an MIS help your school meet government targets on real-time reporting?
Russel Dyas reports



A few years ago most networks in schools and colleges were set up in a specific way. There was the curriculum network, which the students and staff used, and a separate Administration network for the office staff. The underlying principle was that these networks should never meet.

But then schools started to remove barriers between networks and began to think about using management information systems (MIS) in the classroom.

The government decided at last year's BETT show that schools should have real-time reporting to parents. There are benefits and pitfalls to MIS and real-time reporting; both have an impact on teaching and learning. Let's start with the positive impact.

While the initial move to MIS involves a steep learning curve, once you've mastered the basics you will find that entering data directly saves you a lot of time and effort.

For instance, how we can expect to implement personalised learning in the classroom if we don't know the background of our students? By using MIS, staff can alter a student's education to suit individual need.

Harry Weightman, head teacher at Easington Colliery School, which implemented MIS across the school said: "To provide the right environment where children feel confident to achieve, we need to treat them and teach them as individuals. Our staff need to know each child's needs and requirements so that they can encourage them to reach their full potential"

Behaviour management is a big issue for staff in the classroom and the paper trail that comes with it is a large issue for those involved. Many schools currently have paper slips that are written by hand when implementing pupil behaviour management, so the school has evidence if further action is required against a pupil's behaviour. But staff can be unaware that such data gets entered into the MIS system. If we enter these 'slips' direct into the system we have a clear trail that can be followed throughout, and this saves time in the long run.

Furthermore, in this environmentally aware society, using MIS in a more informed way can reduce costs and paper use.

MIS: getting started

There can be teething problems when implementing MIS across a school, however. If the implementation is not thought through in a structured way you can have many issues, with data protection being a particularly tricky area. You need to think hard about what access staff should get to the MIS. Start slow and build upon it.

You could, for example, start with electronic registration. This provides a simple introduction to the principle. Then decide what the next important issue is for the

MIS WORRIES ARE NO LONGER FOUND IN SCHOOLS THAT HAVE ALREADY MADE THE SWITCH

school to focus on - behaviour management or school reports, for example.

The project has some big technical implications so you need to get advice from whoever provides this for your school. If using MIS for school reports, do you need to give staff access to the system from home? Otherwise are you expecting staff members to do their reports from a PC within school?

It gets easier as you start using the system in classrooms.

"My advice is to just go ahead and do it. Schools can spend a lot of time discussing whether teachers should or should not have access to the MIS in the classroom," said Phil Neal, managing director of Capita Children's Services. "They often worry about data confidentiality or mistakes from teachers inputting data directly into the MIS, but these worries are no longer found in schools that have already made the switch and offer teachers direct access to the MIS."

Real-world advice

Engaging the staff is critical to success. Make sure you introduce the project and the MIS system and consider on-site training. If we give staff a voice on how this is implemented and used then they will not feel the changes are being forced upon them.

Nigel Rayner, sales and marketing manager for School Management Solutions, which is part of the RM Group, said: "Getting the buy-in of staff is crucial. Ask your MIS

Bio:

Russell Dyas is an IT professional, education technologist, blogger and public commentator on ICT in education. He also acts as a manager at edugeek.net, the leading website for ICT support staff in education. For more information on Russell Dyas, visit: www.rdyascv.co.uk.



supplier for a simple online overview or other support material."

Also ask the advice of online peer support groups such as *Edugeek.net* and MIS vendor communities. These places have people who already have, or are implementing, MIS across their school and can give you some real-world advice.

Also, get advice from your local authority MIS team or the MIS supplier as they will have a large information database and can, in the case of the local authority, also provide a localised outlook which other support methods can't.

Give me access

Real-time reporting for parents was announced at last year's BETT. At the time the government said: "By September 2010, all secondary schools will need to offer parents real-time access to this information (including the opportunity for secure online access) wherever they are and whenever they want. Primary schools must also meet the basic requirement by September 2010 and the real-time requirement by 2012."

Research has shown a lot of parents are hungry for this kind of communication, and there are lot of benefits to having real-time reporting for students' families.

Indeed, according to Capita Education Services' *Harnessing Parent Power* whitepaper: "In The Parents' Involvement in Children's Education survey (2007), 79 percent of parents claimed they would find web access to reports on their child very or quite appealing."

As parents become responsible for truancy, being able to log in from home or work and see if the child is in school provides piece of mind. There is also anecdotal evidence that such communication is better in primary schools where there is a more informal situation than in secondary schools.

"About two years ago, parents were telling us, 'When my child was in primary school, we knew what was going on and we talked to the teachers often. Now our children are at secondary school it has all gone much quieter'," said Mark Leighton, ICT director, Blatchington Mill School. "So we thought, if we put more information online relating to their children then it would involve parents more in the school community."

Homework diaries are often the most viewed area of real-time parent access, according to Blatchington Mill School.

"The one overriding thing parents want to see is the homework diary. It is the one thing that will bring them to the site," said Leighton.

If we want real-time reporting to work there are a number of things to help you move along the path to 2010. Parent engagement is important, just as crucial as engagement of staff when using MIS across the school. We need to engage parents over real-time reporting, they are the ones who are going to be using and benefitting from it.

Because all state schools are working towards real-time reporting we need to share best practice across the UK. As more schools implement real-time reporting we can share the acquired knowledge with each other to benefit us all.

Talk to your RBC/LA/VLE or portal provider as they may have solutions planned. While the individual school needs to decide what's best for them, they may have a solution that suits you as part of your existing contract.

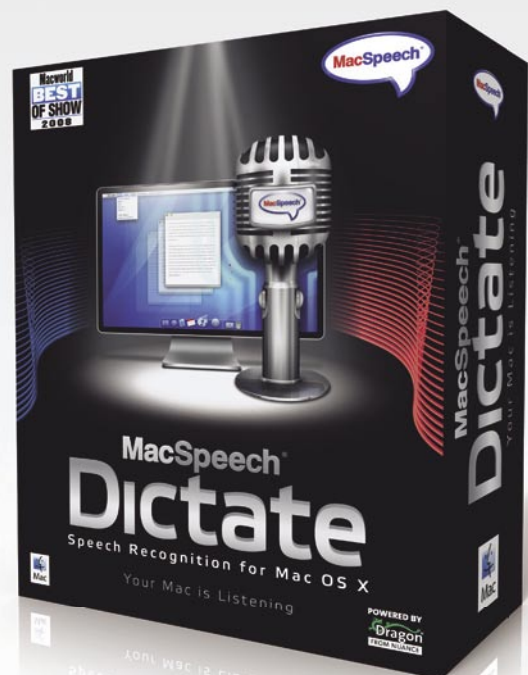
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Edubuntu

AND THE TRUTH ABOUT FREE SOFTWARE

Step into the liberating, enlightening, sometimes frustrating world of open-source software, with Mark Poole



Edubuntu waits to set you free

Open-source software is set to play a more important role in schools, with recent moves by Becta indicating a shift in focus to incorporate open source into its recommendations. Earlier this year the educational technology agency began an open-source project and recently included open source provider Sirius Corporation in its Software for Educational Institutions Framework. Add to this the scathing reports on Windows Vista and Office 2007 interoperability and you would be forgiven for anticipating an exciting new direction for software in schools.

Of course, independent projects have been promoting the merits of open-source software in schools long before Becta cast its glance over. Try schoolforge.org.uk, opensourceschools.org.uk and

schoolforge.net. These are all worth a look when seeking to learn more about implementing open source in schools, but for this article we're going to focus on one piece of software that's specifically designed for that purpose.

THE EDUBUNTU TEACHER TEST

Edubuntu is a complete Linux-based operating system aimed at the education market. It's free and the code used to make it is available to use, adapt and improve.

Countless projects, ranging from one-man-bands to corporations, are creating their own versions, or distributions, of Linux. One of the most popular distributions of recent times is Ubuntu, the aim of which is to make Linux usable for anyone and bring the OS to the masses. So, by bundling educational packages and conveniently

activities to find out how the software works in a real-world environment.

Task 1 - Create a flipchart

Amanda's school uses Promethean Interactive Whiteboards and, to her dismay, Promethean doesn't provide Linux versions of its software. We are off to a bad start.

I could explain that this is not a fault of Edubuntu itself but a symptom of those software providers that support nothing but Windows - a very real but arguably changing situation. However, believe me or not, this won't help her in the classroom.

Amanda: "Active Primary flipcharts are an essential part of my teaching so I would struggle to use an operating system that didn't support the Active Primary software."

Task 2 - Use the web for research

Amanda immediately headed to the recognisable Firefox icon that Edubuntu has helpfully placed at the top of the interface. Being used to browsing with Firefox on her home Windows computer is a definite advantage here; multi-platform software such as Firefox eases the transition between operating systems.

Amanda's chosen topic for research was the perennial infant favourite, Dinosaurs.

Soon we had a collection of T-Rex, Raptors and Stegosaurus and related facts to satisfy the most ardent junior Dinophile. However, feeling in a devilish mood, I asked Amanda to close all the open windows and find all the information she had saved. Linux uses a different file system to Windows which can cause confusion among Linux newcomers, would she be able to suss out

The foreboding Edubuntu desktop





the file system? Following a short pause, she discovered the helpful Edubuntu file browser located at the top of the screen and with a few clicks we were back in Dino heaven.

Amanda: "I used the internet for research with no problems at all, it worked just the same as in Windows! Also, after playing with the file system for a while, I found it easier to use than Windows."

Task 3 - Writing documents

Planning, letters, shopping lists... a teacher's paperwork is never done. One of the most-used programs in a teacher's software arsenal is the word processor, the most-used of which is Microsoft Word.

After quickly browsing the available office software, Amanda settled on OpenOffice Writer - a good choice. Writer is the word processor application from the free OpenOffice.org office suite. The suite uses an interface that users of Microsoft Office (pre-Office 2007 ribbon) will be used to. Amanda was quickly up and running creating her usual documents with no trouble at all

Amanda: "Writer was easy to use and the familiar layout meant I could create my documents just as easily as when I use Word"

Task 3 - Classroom resources

There are important choices in life: Coke or Pepsi? McDonalds or Burger King? Word or Publisher? While I fall into the 'use word processor for everything' camp, Amanda searched all the available office programs for a Publisher clone. Unfortunately she was doomed to fail as OpenOffice.org doesn't contain such a thing. Although it could be argued that you can do the same job with Writer, Publisher offers features that make resource creation a good deal easier.

Unfazed, Amanda fired up Presentation, a PowerPoint clone, to make visual resources. Again, the familiar user interface provided Amanda with everything she needed.

Amanda: "Not having a program like Publisher is a real problem for me but the Presentation program was great, even better than PowerPoint."

Task 4 - Assessing pupil software

Okay, not exactly a task but more of a poke around at the supplied applications. Amanda looked through the available software to see what was relevant to the activities that took place in her lessons. As discussed above, word processing in general is covered by Writer, but what about the younger children who usually use a simplified processor such as Textease? Nothing really fits the bill. Having no simplified word processor seems an oversight in an educational package.

Next up, drawing pictures. Usually done with the staple application Microsoft Paint or another simple paint program, could Edubuntu provide something suitable?

Amanda quickly spotted TuxPaint which describes itself as 'a painting program for children' - perfect! So she clicked the icon and waited. Nothing happened. I imagined a class full of infants turning their watery eyes to the teacher as they realise there will be no painting today.

Amanda: "Overall Edubuntu has potential. Some software is actually better to use than the Windows versions I am used to. However currently there is too little to offer to the younger pupils."

CONCLUSIONS

'Free' sounds great. But before we burn all those Windows and Office licences, let's take some time to assess what comes with the freedom. This is no exhaustive review of open-source software but is intended as a brief dip for the unacquainted, using Edubuntu as an example. However we can draw some conclusions from Amanda's experience as it can be seen as typical of people's experience when first attempting to go free. Some things are better and some worse; any decision needs to be carefully made.

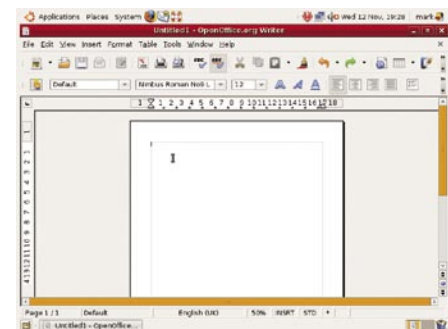
The version of Edubuntu tested was a basic install, but the beauty of Edubuntu is that there are vast repositories of free software that can be added. Wading through this can be a Herculean task, but the chances are there's something out there that will satisfy your needs. The time taken to assess what's available and whether it can work for you, then train your users for the new system, cannot be underestimated and should be thoroughly researched.

The driving forces behind both proprietary and free/open-source software are very different and bring advantages and disadvantages. Free software obviously brings lower cost of ownership but the support model is likely to change. If your proprietary software is causing you problems you may have a support line to call to help you through your issues, your free software is likely to be offered on a no-support basis. In this case you may be scouring community support forums or, depending on the size of the project, talking directly to the developer.

The support model of free or open source however can be superior to the proprietary. We are all aware of situations where a product is no longer supported by the company which produced it. This can happen for a number of reasons, small developers can move on to other things, the company goes out of business or they want you to pay for an upgrade. On the other side of the fence, when a Linux developer decides to



"Wait that looks like Firefox in Windows"



"Just like MS Office, before the 'Ribbon' "

end official support for some of their older distributions this need not happen. If the software is open source then anyone can take on the support.

One of the major headaches, if you decide to move entirely from a proprietary system to free or open source, is what to do with your current software. Schools have invested vast sums of cash in building up a bank of software that covers their everyday needs and much of it isn't compatible. It is possible to run Windows programs on other platforms using programs such as Wine and Crossover but support for such programs is limited and not a complete solution.

The cost savings available to schools by using free/open-source software can be substantial, which could encourage establishments to take up alternatives to the current dominant force of proprietary software. This is more likely if Becta really embraces the free/open source movement.

Bio:

Mark Poole is a Network Manager for a school development group in Leicestershire. Outside of work, Mark can often be found tinkering with his own burgeoning collection of nerdy IT gadgets, which is rapidly becoming a second job, wasting hours on nerdy online games or perhaps reading some nerdy comics.



Data protection:



Protect your school and your job

It may be one of the less glamorous parts of your job, but recent scandals prove data protection must be a top priority, says Tony Sheppard

IT security and the misuse of personal information were rarely out of the news during 2008. It seems like hardly a month went by without a new scandal about pension, child support or bank account details being lost.

Whether it's a USB flash drive, a government laptop or a CD being sent through the post, we know that our personal data is shuffled around on an increasing basis. And we all have to make sure our school or college isn't the next to hit the headlines.

Earlier in the year the Information Commissioner's Office demanded that all central government departments review their practices.

It strongly suggested that other agencies should follow suit. Becta spent considerable time producing both summary and extensive guidance on this for schools. The guidance covers a number of areas and gives examples of best practice.

The problem is, while many of us don't want to admit it, we just don't care that much about data. Data is simply one more thing that has to be managed, another form of red tape which distracts us from our jobs.

But this doesn't mean we can walk away from it. By following some easy-to-manage steps, you can ensure you keep on top of your data-protection responsibilities.

Don't bank on it

Would you leave your bank statement on a desk in the classroom? In that case why do you leave your computer logged in and let a student use it after you've been shopping on the internet.

You should take the same attitude to storing electronic information as you do securing important paperwork.

Encrypt in a flash

All data should be accessed only by those who are authorised, so make sure you've put effective encryption in place. TrueCrypt (truecrypt.org), which encrypts an entire partition or storage device such as a USB flash drive, is probably the easiest to start with. You can set it up yourself in 'traveller mode' meaning you don't need to worry about installing lots of software on different systems. That means your data is password-protected and encrypted wherever you go. In fact, some think TrueCrypt is the answer to all our problems. If only life was that easy.

So what is still missing?

There is the small matter of auditing access to information. It's one thing to say that everything is secure and protected but what happens when it's information that pretty much all teachers need access to?

You should be able to find out who has produced what report, or downloaded particular files, from your management information system. Then, should the worst happen and someone accidentally misplaces the complete salary list of the senior leadership team, it's a good idea to know who has been downloading it.

While that's unlikely to happen, carrying around details of the special education needs of students on a USB stick is common. You need to understand the implications of this.

Secure the school website

School websites are becoming more powerful and less like what we know as a normal website. Welcome to the world of Visual Learning Environments, Managed Learning Environments, Learning Platforms

and ePortfolios. All learning environments require individual usernames and passwords for authentication, and authentication should be done over a secure connection (https).

Count the costs

Make sure the costs for this are worked into your long-term plan for IT, and then develop an ongoing plan that covers information management. It doesn't have to cost the earth - speak to your local authority for guidance on procurement.

Learn from the Siro

In each school there will be a Senior Information Risk Officer (Siro). This is the person with responsibility for information management in the school and may be the head or another member of the senior leadership.

The Siro should read and digest the Information Handling document. They will appoint information asset owners who will make sure the right people are given access to the information they own and control.

The Siro will work with staff on data awareness. In short, the Siro should be reading this article. If that's you, hopefully you know understand a little more about what you need to do for your school.

BIO

Tony Sheppard is an education IT specialist on secondment to Northamptonshire County Council in the role of Technical Manager, ICT in Schools, Children and Young People's Directorate. Turn to page 18 for a full bio.

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Going Green



School IT departments face a challenge when it comes to saving energy, but it can be done, says Jonathan Wiltshire

Going green is this year's fashionable pursuit: we are all constantly reminded of the need to reduce our energy footprint, and the IT department is often the worst offender of all. Since its total energy consumption is proportionally greater than many other departments, so too is the amount of energy it wastes. But while reducing this energy commitment is a laudable aim, few IT departments seem to be having any success.

More compellingly, a school is a place of education, and students who are encouraged to save energy – and who see their mentors doing exactly that – will carry this habit into their adult lives. This will of course benefit both them and their own children.

So here are three techniques that are practical, easy to implement, and worth their cost in electricity savings alone.

Switches can be off, too

Today's typical school network is spread across several buildings, sometimes more than one site. Besides the core switchgear at the server room, network administrators will almost certainly be running peripheral switches, routers and hubs near to clusters of workstations in IT rooms, offices and classrooms. If your school has a wireless network, there may be tens of access points spread across the site, each with their own power supplies. Their power consumption is not insignificant, even given their small size.

Just how much power does an idle switch consume? According to Cisco's Catalyst series specifications, typical consumption is something in the region of 30W – equivalent to a high power halogen light bulb. Take a moment to count up the peripheral switchgear used at your site, then multiply

Educating users about switching off equipment, much as they would switch off the lights when leaving a room, can have the most pronounced effect ”

it by this figure and it soon starts to add up. Switchgear is mostly idle, and this represents an enormous use of resources.

Switchgear is such an important part of a structured network that many administrators simply cannot imagine life without it. While it is true that in normal operations, switchgear is an essential element, the same cannot be said for out-of-hours time and holiday periods. At these times, administrators should consider shutting down non-core equipment until demand rises again.

Educating users about switching off equipment, much as they would switch off the lights when leaving a room, can have the most pronounced effect. Not only does it allow students to take possession of big savings in their own spaces, it encourages them to think about what really needs to be running when the building is empty.

If you are fortunate enough to be planning new deployments, perhaps a new building or IT suite, take a few moments to consider concentrating your switchgear around areas of use. You might, for example, dedicate a switch to one suite, serving 20 workstations. Why not put that switch in the suite itself, where it can be switched off along with the rest of the room when the lesson ends?

If the idea of students cutting off large sections of your network makes you nervous, or the cabinets simply aren't accessible, you might consider installing a time clock for the cabinet. This plug-in device, which can be obtained for less than £10, sits in between the supply and the cabinet, and switches it on and off at a set time each day. This means

that overnight you might choose to stop supplying the cabinet between 7pm and 7am the next day – a saving of 50 percent. In the course of a year, that's the kind of figure that will make the bursar happy.

Shut off non-critical services

Virtual servers are hardly a new concept. Consolidating bulky, low-demand servers into virtual machines running four or five guest servers dramatically reduces waste. The same physical machine can share processors between guests that require them, instead of sitting idle. However when virtualising, the fundamental problem is often overlooked: low demand on virtual servers is nearly as wasteful as when they are dedicated machines. The offset from running only one set of fans and hard drives is minimal; most of the energy consumption occurs when the server is under load or just 'ticking over', waiting for the next request from a user.

While some servers, notably domain controllers and VoIP exchanges, need to be available at all times, many servers can run on demand. Do you really need your print server lying awake at 3am, for instance?

Shutting down servers that are not critical overnight has many benefits. To continue our print server example, assume that it is not virtualised and contributes 60W to the total electricity bill. A modest shutdown from midnight to 6am is still a saving of around 132kWh across the year. At current electricity prices, that represents a significant saving. Extending this to include



holiday periods and weekends would be even more dramatic. A regular period of downtime helps administrators in other ways. Windows Updates, the normal way to keep a Windows server secure, tend to require a reboot of the system even in a virtual environment. Often this means a late night for technicians to ensure that these important patches do not interrupt the normal running of the school.

When nightly downtime is already scheduled, the process simply requires a technician to apply patches sometime during the day, and the overnight reboot will ensure that they take effect from the next morning.

Give workstations a rest

Workstations are the principle cause of unnecessary energy consumption in the department. In business a workstation is often allocated to just one person. This encourages possession and an air of "the day being finished" by shutting it down. In schools, however, large suites can be shared among departments, and are often left running at the end of the day. With an idle workstation typically using about 100W, and a typical school having perhaps 400 workstations, waste from running desktop PCs up to 15 hours overnight results in 600kWh of waste per day.

Traditionally, automated shutdown at the end of the day has relied on two methods: a scheduled task configured on every machine, painstakingly maintained individually, or a script called by a scheduled task on a server. The administrative overhead of the former is considerable; the latter is slow, unreliable and relies upon a server and network connectivity to be present at activation time.

Now, though, there is a third tool in the technician's armoury: Shutdownertron.

Available free from powdarrmonkey.net/shutdownertron the application is regularly developed and updated, and support is available at edugeek.net. Shutdownertron, now in version 1.3, is "a group policy-compliant, decentralised shutdown mechanism". It is distributed as a small agent service to each workstation, and configured using the Group Policy system found in Windows Server 2000, 2003 and 2008.

Features include a choice of shutdown behaviours: a warning dialog with a variable countdown, message and, if permitted, abort button; event logging; and local override for workstations that should be skipped.

An administrator configures all settings through Group Policy. These are collected at intervals by the remote agent, and from then on the process is managed on the workstation itself, relieving the need for server connectivity at the time of shutdown.

Group Policy integration means that different settings can be applied to different groups of workstations, even down to individual machines. You might, for example, wish to shut down most workstations at the end of the school day but keep one room running for an after-school club, which then shuts down separately later in the evening. Shutdownertron can even run on servers, so that the same power savings can be realised overnight there, too.

BIO

Jonathan Wiltshire is Assistant Network Manager at King's High, Warwick. In his spare time he writes Windows software and is involved in the Debian GNU/Linux project.

Servers to get Energy Star rating



The US Environmental Protection Agency (EPA) has released the third draft of its Energy Star specification for servers and expects the final spec to be ready for use in February.

The specification aims to help customers identify the most power-efficient servers when making purchases. The Energy Star program already covers desktop PCs, monitors, light bulbs and dozens of other products. Products are identified with an Energy Star label.

The third draft sets power consumption limits for when a server is in an idle state, something that had not been established in the second draft. To qualify for the Energy Star logo, vendors must also meet minimum requirements for power supply efficiency and publish a data sheet for each server indicating its power and performance levels for maximum, minimum and typical configurations.

The specification, which is due to take effect on 1 February, 2009, covers servers with up to four processor sockets. A more comprehensive "Tier 2" specification planned for October 2010 may include servers with more than four sockets.

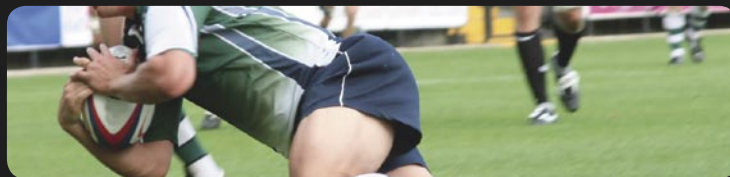
The idle power limits have been set at 60 Watts for one-socket systems and 271 Watts for four-socket systems. Additional components are given an additional power allowance. For example, a second hard drive gets an additional 15 Watts of power.

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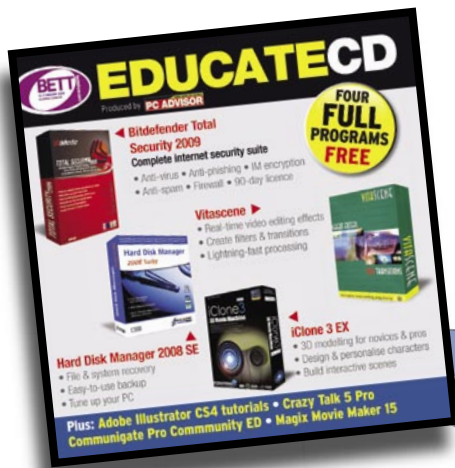


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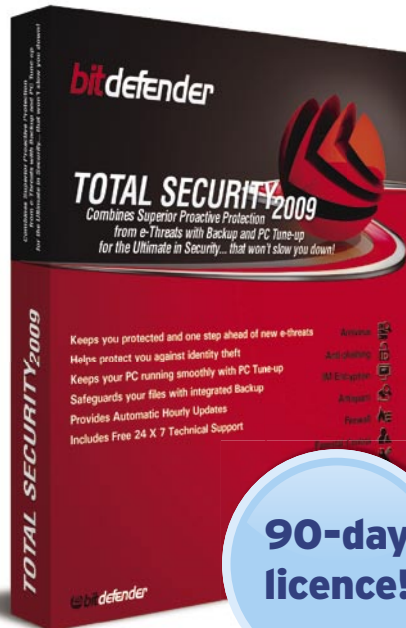




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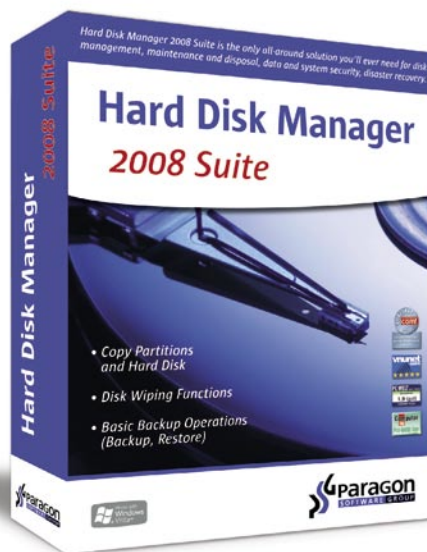
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A Wi-Fi monitor also helps prevent unauthorised access to your network.

Furthermore, BitDefender's security suite can block access to inappropriate websites and email. Schedule and limit children's access to the internet and to applications. And as the software reduces the system load and avoids requesting user interaction during games, your computer can benefit from fine-tuned performance.



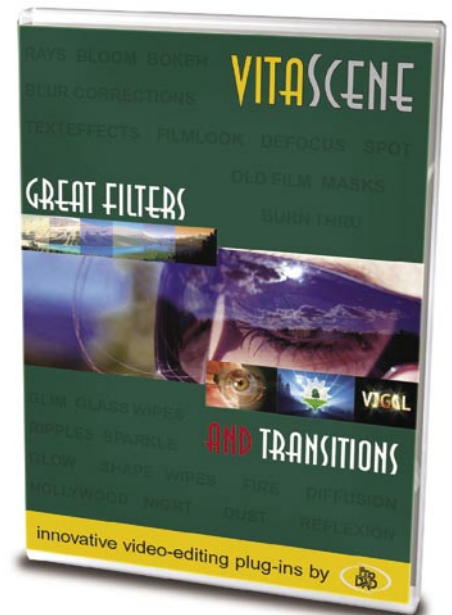
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* The SE version included on this disc requires registration and does not include the recovery CD.



Vitascene Starter Edition

Vitascene allows you to add effects and transitions to videos. Deliberate blurring, expertly selected colour matches and understated lighting create sophisticated visual moods on film, enabling drama to be perfectly accentuated.

It's amazingly easy to use and, thanks to the latest GPU technology, lightning fast. Modern graphics cards have an extremely high level of computing power, which is vastly superior to that of the CPUs used in PCs. With Vitascene this power is used to create stunning effects.

In the past, these kinds of visual effects have been extremely expensive to produce, but now they are feasible for any professional. Lightning-quick processing during editing as well as at the final stage forms the basis for creative production!

Easy to use, non-complex key frames provide maximum freedom when making changes, resulting in bewitching transition effects, created using a combination of light and blur, as well as magically changing colour compositions within scenes.

The VitaScene Starter Kit contains a total of 50 effects.



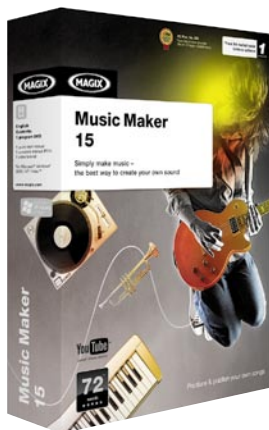
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iClone 3 is a complete 3D movie machine with real-time animation and actor-creation tools for rendering movies with ultimate detail.

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iClone 3 Experience (EX) is a free edition of iClone, which includes the full PRO features for 30 days and unlimited features of iClone Standard with no expiration. iClone 3 EX contains everything necessary to learn the rich features of the PRO edition, but output is watermarked with the iClone logo and limited to 320x240 size ratio.



MAGIX Music Maker 15 trial

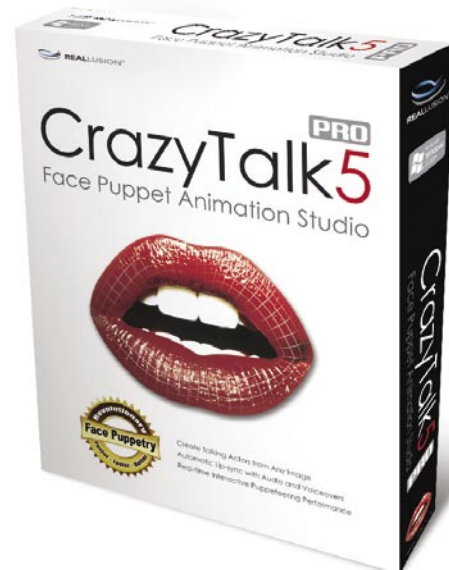
Listening to music is fun, but making music usually evokes memories of embarrassing singing lessons at school.

For 15 years, MAGIX Music Maker has been giving its users the confidence to make music anyway - without the need to read music or have the perfect singing voice. This latest version features an even more intuitive interface and is available in UK retail now at £49 inc VAT.

MAGIX Music Maker 15 is here to prove that making music is easy. Everything you need to get going is included: thousands of sounds, a mixer, effects, and practical videos which will turn you into a pro in no time. No prior knowledge is required; you can get started right away.

The new Easy mode gives clear, easy-to-follow instructions. The descriptive video tutorials provide comprehensive information about the diverse options provided in the programme.

Also, there's no need to worry about copyright. Just go ahead and upload your creation directly to portals such as YouTube, because each of the 1,500 samples in the library can be used licence-free, making them available as a music file or even indirectly as background music in a video.



Crazy Talk 5 Pro

Transform photos and images into talking animated characters and bring them to life with real-time puppeteering.

Crazy Talk allows you to turn any PC into a face animation movie studio. Choose any image - anything from animals, cartoons, drawings or photographs - and import it into CrazyTalk 5. Then, you then need only to show CrazyTalk where the eyes and mouth are located on your image, and the software will do the rest.

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- Getting started with new documents

This is a guide to the options available as well as a run-through of how to use some key preferences.

- Introduction to Paths and the Pen tool

How to use the Pen tool and the concept of different point types - this provides some good exercise tips too.

Talented Pixie is a sister company to Corps Business. It has been providing computer software training over 18 years and has grown to be the largest training centre for Apple, Adobe and Quark Systems in the UK.

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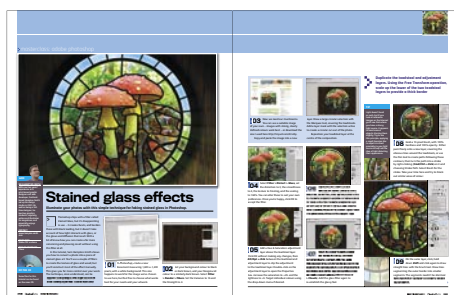
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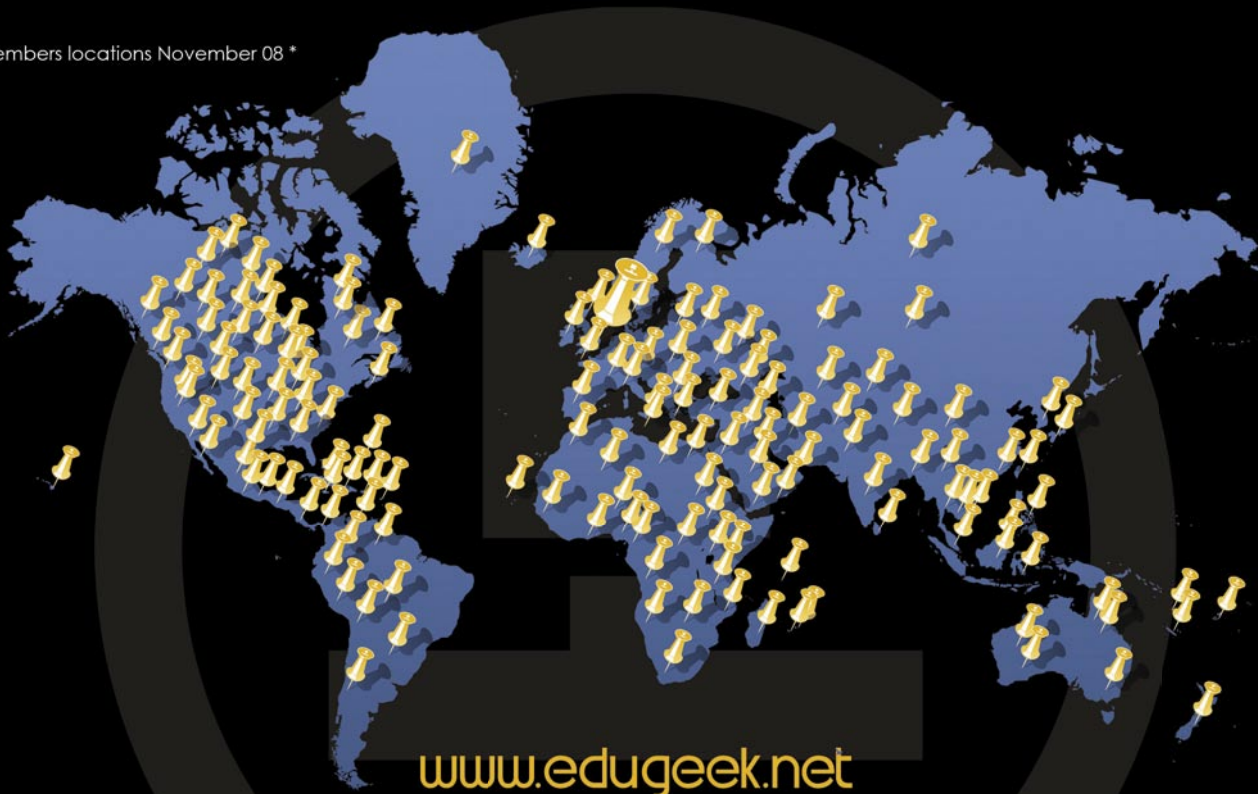


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Where's the first place you turn if you can't connect to your WAN, LAN or SAN?
If the answer is a dictionary, let Chris Byers be your guide

Ever been baffled by technology buzzwords and wished your network manager would talk in plain English when they explain the underlying causes of your computing problems? If so, you're not alone.

To make matters worse, you may find out that your school techie *is* speaking in plain English. Often there's no easy or quick way to explain the equipment and infrastructure that affect you on a day-to-day basis.

Fear not. Here I'll provide you with a quick overview of commonly found components of a school's ICT network.

These easy-to-understand explanations should help you wade a little more confidently through the minefield of acronyms, equipment and jargon that we techies sometimes employ.

Backups: A backup is where critical data and files are stored on a separate computer or disk away from its original source. The media can either be magnetic tape, hard disks or, less commonly, CD or DVD media. There are several backup strategies. These include:

- **Full:** All the files selected are backed up in their entirety.
- **Incremental:** Only files which have changed or have been created since the last backup are selected. Each time an incremental backup takes place the newer\changed files are created anew on the backup medium, leaving the older versions remaining.
- **Differential:** Only backs up new or changed files created since the last full backup. This overwrites the previous backup.

Cabinets (Cabs): Cabinets come in various sizes and are used to house either networking equipment or servers\computers. You will often see them mounted on walls in classrooms. The larger types are located in server rooms and IT offices.



CAT5 (Cable): A term used to describe any modern network cable. CAT5 is a 'standard' of cable that's certified to speeds of 100 megabits per second (Mbps). It has been superseded by CAT5e, which allows traffic up to 1 gigabits per second (1000Mbps or 1Gbps). CAT 5 cables have a type of connector at each end known as an RJ45 connector to facilitate connection to the network.

CAT5 cables are used to connect computers and printers to the network and to connect the network to switches and other network infrastructure.

Dynamic Host Configuration Protocol

(DHCP): A method of issuing IP Addresses (see 'IP Address') to any computers that wishes to join the network. When a computer starts up and it is attached to the network either via a network cable or wireless, it will request an IP address from any available servers pre-configured to give them out via DHCP. DHCP also allows you to tell computers which addresses other servers and devices such as DNS and routers have.

Disk Array: An enclosure containing many hard drives and attached to the network (see 'SAN'). These can be configured to appear as many smaller hard drives or as one large drive. Designated servers or computers can 'see' the drive as a local hard drive attached to the specific machine.

Domain Name System (DNS): This is a role commonly given to a server. In essence the server maintains a list of computers and their IP addresses. When one computer needs to 'find' another computer it will ask the DNS server. There are also larger DNS servers on the internet which maintain the IP addresses of websites to allow your computer to find the correct destination when browsing the web.

Fibre: Used to describe fibre-optic cable which is used most commonly in networks to link remote buildings or network segments. Fibre-optic cable is able to carry fast network traffic, but is relatively fragile when compared to CAT5 cable.

Imaging: A catch-all term used to describe the process where computers are reinstalled with all of their programs and settings remotely instead of having to set up the operating system from scratch using a DVD.

To create an image the technician will set up a computer and ensure all of the software and updates required by other PCs are installed on it. This computer is then copied to a central location over the network via a process known as 'imaging'. This single image can then be copied to as many machines as required whenever it is needed.

Internet Protocol (IP) Address: A unique number allocated to any computer or peripheral device, such as a printer, connected to the network. Like a telephone number each computer has its own unique number, known as an address, which allows the network to direct traffic to it. These numbers can be assigned dynamically by a server. For example, a number will be given at random from a predefined range when the computer starts, or given a 'static' address where the computer or equipment is given a number which is permanently assigned to it. >>



THUMB DRIVES: SMALL STORAGE DEVICES THAT CAN BE PLUGGED DIRECTLY INTO A COMPUTER'S USB PORT TO ALLOW THE USER TO SAVE OR RETRIEVE DOCUMENTS FROM THEM ”



Local Area Network (LAN): The network contained within your school grounds. It allows your computers to talk to the internet and other computers such as servers. It can include both wired and wireless elements.

the school and the internet\WAN (see 'WAN', below), and all traffic coming into and leaving the school travels through it.

Routers, like managed switches, can be used to monitor, divert block or allow network traffic as required.

Storage Area Network (SAN): A technology which allows for special disk arrays or backup devices to be connected to a network, but enabling the servers or computers on the network see the devices as being directly attached to them. For instance, if a disk array were attached to the network and a server is configured to connect to it, the server will think that the disks are a part of its hardware and directly attached to it.

You would therefore see that the server has a large amount of disk space available to it. This technology means you can keep all of your data in one place, and in a reliable and robust manner.

Scripts: Text files that are written in such a way as to provide a computer with a list of instructions to carry out a particular task without users intervention. Basic scripts are often used to connect printers, user areas or to set the system time.

More advanced scripts can perform tasks such as bulk creating users, and changing computer settings. They are most commonly used when logging on or off a computer.

Server(s): Often powerful, and usually quite large, servers are computers that provide files, websites and services to other computers connected to the LAN, or sometimes accessed via the internet. Servers are most often housed in their own special secured rooms with air conditioning, known as server or computer rooms.

Secure Sockets Layer (SSL): A method of encrypting and transmitting sensitive network traffic between two computers to prevent the signals being intercepted and 'read' by third parties.

Thumb drives, memory sticks, USB drives: Small storage devices that can be plugged directly into a computer's USB port to allow

the user to save or retrieve documents from them. These devices often have very large storage capacities allowing users to carry all of their files in one place instead of having them bound to a particular computer.

User Area: A folder holding all of a user's work on a server. Usually only the user and network admin staff will have access to this.

Uninterruptible Power Supply (UPS): A large battery which provides emergency power to the servers and network equipment in the event of a power cut to prevent data loss and computer damage. If the power is cut off to a school or server room the UPS seamlessly switches power on any attached devices to the UPS battery backup.

More advanced UPS devices can be programmed to send out signals to attached devices to shut themselves down if power is not restored after a set time has passed or the UPS battery reaches a certain level.

Wide Area Network (WAN): The external, larger, network your school is attached to. Regional Broadband Consortia are a good example of a WAN.

Wireless Base Station: A device that's very similar to a wireless router but simply allows you to connect wireless clients, laptops etc, to your wired LAN.

Wireless Router: A device that allows you to connect directly to the internet over a wireless connection. Wireless routers are usually physically connected to either to an ADSL (broadband over a telephone line) or cable connection.

BIO

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Netbooks: These are small laptop-type devices with a hardware specification lower than that of full-size laptops. Designed for extreme portability, netbooks still give the user the ability to work on office documents, send email and browse the internet.

Netbooks often lack CD or DVD drives and run off either custom versions of Linux or Windows XP Home.

Network Hub: Hubs are almost identical to switches in design but are much slower in the way that network traffic is routed to computers attached to them. They are inefficient and not suitable for today's modern networks.

Network Switch: A vital piece of networking equipment. A switch ensures network traffic is sent to the correct computers. A typical school LAN will have many switches, and some expensive versions are 'managed'.

This allows the technical staff to monitor, block and control all network traffic passing through the switch.

Network Traffic: A term used to describe all signals transmitted over a network.

Router: Similar in design to a switch, a router is most often used as a connection between



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