

Hands on with the hottest hardware

Manufacturers will be showing off their wares, from the latest widescreen projectors to a robot dog made out of bits of junk

- George Cole
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The number of computers in schools has risen dramatically, but we are still some way from each child having his or her own. Statistics from Becta, the educational technology agency, show that, in primary schools, there is one computer to every 6.25 pupils, while the figure for secondary schools is one for every 3.6 pupils. These days, the talk is of personalised learning and universal access, where every child has the chance to use a portable learning device. But in schools, access to portable devices is much lower than for desktop machines, says Becta: in primaries, there are 13.9 pupils to every desktop and 31.8 pupils for every laptop. For secondary schools, the figures are 4.3 students per desktop and 61.4 per laptop.

Until recently, portable devices generally meant expensive laptops. But then the Taiwanese manufacturer Asus changed the landscape by launching the Eee PC, a small, portable and basic laptop. The original device used a screen designed for a satellite navigation device and ran a version of Linux, the open-source low-impact operating system.

Portable computers

Big players in the technology world including Intel, the chipmaker, and Microsoft spotted an opportunity and the first low-spec, low-power laptop running Windows soon followed.

Asus defined the market with the Eee PC, and other manufacturers including Dell have followed, sparking a boom in so-called "netbooks". These manufacturers also spotted that education is a rich seam of potential sales: a cheap, rugged and low-spec portable is perfect for school use. Prices start from less than £169. "Portable computing is now more affordable and schools can think about buying portable computers in large quantities," says Nick Stacey, marketing director of RM, which sells Asus netbooks to schools.

Westlands school in Kent has ordered almost 800 netbooks. A year ago, it gave 300 to its year 10 pupils; this year another 286 went to year 10, and a further 200 are waiting to be distributed to its sixth form. Ana Russell, Westland's assistant head, says: "It's made anytime, anywhere learning a reality. It's boosted their self-esteem and helped motivate disenfranchised learners, because many of our students don't have access to a computer at home."

Another technology that is gaining a foothold in schools is in fact an old paradigm: the thin client. Businesses used to supply workers with a terminal that connected to the server rather than having a hard disk and programs on a hard drive, and now schools are making the most of this, with the up-to-date addition of being able to access material or software via the internet as well as via a server.

Companies such as ICT Networks, Dell and HP will be displaying network PC technology and products. MiniFrame will be demonstrating its SoftXpand system, which allows additional monitors and keyboards to plug into a host computer, in effect allowing one computer to be used by six pupils at once.

Sam Fisher, headteacher at Hope primary school in Derbyshire, has purchased three computers with SoftXpand and runs 150 other workstations from them: "They work well and they are very reliable. It's saved us a lot of money and cut down on the technician time we need to manage our computers."

Whiteboards

Moving up the size scale, interactive whiteboards - big displays linked to computers - are useful in schools but not widely deployed: the British Educational Suppliers Association (Besa) found in a recent survey that there are, on average, just 8.6 interactive whiteboards in primary schools and 24.6 in secondary schools.

One problem with them is that many use proprietary rather than standard many systems, which makes it difficult, if not impossible, to use resources made for one interactive whiteboard with a board from another brand. But this looks like being resolved with a move by Becta and RM to develop a common file format, supported by the manufacturers - it should be available in the second half of next year.

On show at Bett will be the 600i3 from Smart Technologies, which is among the first companies to produce a widescreen interactive whiteboard. Smart will also be showing the Smart Table, an interactive tabletop device for primary pupils. It can be used by up to six children at once, who can select and move objects, draw or write on the device.

The table will be "ideal for collaborative work," says David Cregan, vice-principal and head of eLearning at St Matthew academy in Lewisham, south London. St Matthew has 1,200 students aged three to 16, and a whiteboard in every classroom.

Cregan is also a fan of the Smart Document Reader: "It's a camera on a stand and it works like an OHP [overhead projector]. It's great for demonstrations and presentations and we use it in lessons such as art and cookery."

Response systems

Some pupils find standing in front of their peers and talking to them or answering questions too difficult. "I think this is a bigger problem with secondary than primary-age pupils," says Cregan. "Younger children don't seem to mind making a mistake in front of their peers, but for older children it can mean loss of face."

Interactive response systems are one way around this problem, because they use handheld devices that allow them to answer questions anonymously (although most systems allow the teacher to scrutinise individual responses). This not only helps those who might be shy, but it also gives the teacher a better idea of how many students have grasped an idea or concept. In the past, interactive response systems simply allowed students to press a button to denote yes or no, but the latest systems enable them to use words, phrases, numbers and symbols. Companies such as Smart, Promethean and Qwizdom are showing a variety of interactive response systems at Bett.

Projectors

Projectors are an alternative to whiteboards and many schools have gone down this route. However, there are three challenges: the first is how easy - or hard - they are to use. This is especially important if the projector is used in different locations or with various devices, as teachers will have to customise the settings to get the best results. This can sometimes mean navigating a maze of confusing menus.

The second issue is cost of ownership: projectors use expensive bulbs that have to be replaced regularly; and third is security: thieves are keen on projectors.

Hitachi's ED-A101 projector uses a longer-lasting bulb which runs for twice as long as previous bulbs - 4,000 hours compared with a more standard 2,000. It also has a new hybrid filter system which only needs cleaning every 4,000 hours: some projectors need cleaning every 400 hours. Like many brands, Hitachi's projectors also have security in mind: some require a Pin number to be entered before use. Other measures include tamper-proof security labels and security locks such as Kensington lock points. Some models are bright orange: hard to shift on the black market and easy for their owners to identify should they be recovered by police.

Being able to put hardware on the network makes it much more useful to a school, and Epson will be demonstrating its network projectors at Bett, including the wireless EMP-1715 which can be controlled remotely and also has the facility to diagnose maintenance problems remotely. And just as widescreen TV is becoming more common, so too are widescreen projectors: Epson is among the companies that will be showing off this hardware.

Printers and robots

Printing is a big cost to any school, and Epson, known for its consumer printers, this year offers the B500DN printer, an inkjet printer designed to deliver high-volume printing in full colour at the same cost as monochrome laser prints.

The fun end of the hardware industry is surely robots and roamers, but while they look and feel like overgrown cool toys, they are useful educational tools too. Valiant Technology will be demonstrating the successor to its popular Classic Roamer, called Roamer-Too. On the Q4 Technologies stand will be a range of robots including Robosapien V2, which has sensors that can respond to colour, movement and sound. It will be joined by RS Femisapien (pictured), which can store an 80-movement sequence of actions, including dancing and martial arts (£179). Wrex (pictured) is a scrappy dog, built from bits and pieces of junk, and is designed to appeal to younger children. It can store up to 84 commands, which can be programmed using a remote control or computer.

Another robot is the three-wheeled RS Tribot which can store a 60-drive command program and can play three games to help children develop spatial awareness. Rovio, a Wi-Fi enabled mobile webcam that uses design principles based on the Mars Rover projects, allows users to view and interact with its environment through its streaming video and audio. Users can direct Rovio's movements, neck-mounted camera and audio from a classroom or a PC anywhere in the world via the internet, using any web-accessible device such as a PC, mobile phone or even a games console.

Space savers

Finally, a more prosaic and low-tech piece of kit is the Freemote Powerdesk from Esa Macintosh, which stores a PC in the unused space behind the desk panel. Another space-saver from I-Desk Solutions is the i-Rise, which consists of a reinforced keyboard embedded into a desk and an LCD screen flush-mounted into the back panel. Perhaps space really will be the final frontier at Bett.

Weblinks

Asus (Bett stand A79): asus.com

Epson (F80): epson.co.uk

Esa McIntosh (D101): esamcintosh.co.uk

Hitachi (G30): hitachi.co.uk

I-Desk Solutions: (D90): i-desk.co.uk

Miniframe (U68): miniframeuk.com

Promethean (B30): prometheanworld.com

Q4 Technologies (S117): gridmagic.com

Quizdom (H40): quizdom.com

RM (D60): rm.com

Smart Technologies (B50): smarttech.com

Toshiba (L30): toshiba.co.uk

Valiant Technology (C86): valiant-technology.com