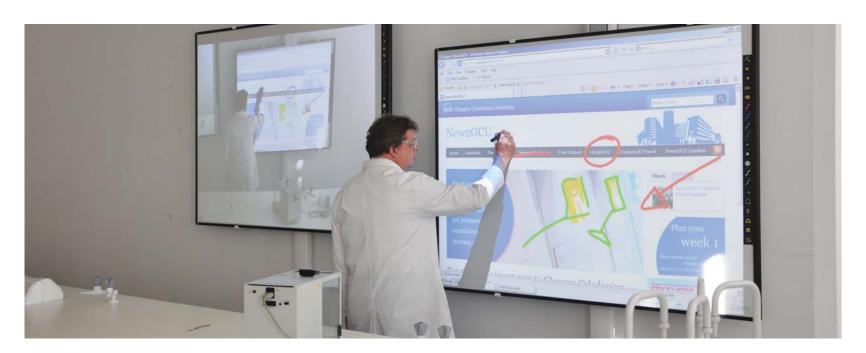Geny Caloisi set out to find out what front-of-the-classroom technology is available and what's best to help teachers and students to impart and absorb knowledge.

Writing on the wall

PolyVision eno interactive boards, paired with Hitachi short throw models in use at Glasgow Caledonian University in Scotland.

Talking about the teaching wall will bring different images to different people, but the days of blackboard and chalk are over and the interaction between students and teachers today has to be multi-way and dynamic.

Having a focal point in the classroom is still important, all interviewees agreed; but there is no 'one size fits all' solution. The benefits for teachers and students are similar. Prices and settings vary.

The buzzwords in this market are: interactivity, collaboration and tablets. As Neil Hartigan, NEC Display Solutions' channel director puts it: "Using collaborative tools, the teacher can empower students to take ownership of the teaching material, helping to stimulate and engage young minds."

Empowering teachers and students is a common objective amongst manufacturers. Smart Technologies, for instance has its Smart 800 series of white boards, which allow multiple touch points and collaboration. With the Smart Board 885ix students can experience freestyle interaction: four students can work together anywhere on the surface without being restricted to defined spaces or specific tools.

Smart products are connected to Smart Notebook where teachers can also save any notes or content generated during the lesson.

David Lapides, director of product management at Smart, points out that aside from collaboration the company is also looking to provide: personalisation, measurement tools, flexibility and new ways to achieve student engagement.

"Although the teaching methods change from country to country, education is becoming more personalised," says Lapides. "Teachers need to be able to measure the improvement of the individual student, as well as of the group, and see how they are evolving in a more detailed manner. Technology today can make this easier to do."

> **"** *Teachers need to be able to measure the improvement of the individual student, as well as of the group, and see how they are evolving in a more detailed manner.* **"**
> *– Mark Lapides, Smart Technologies*

Collaboration

Undoubtedly, online material is a key resource for teachers. From training and sharing, to getting support material, teachers cannot afford to be 'off line'. Textbooks become dated almost as soon as they are printed, so there is a migration to using more content online.

Daniel Rose, category manager for professional projectors and displays at Panasonic, notes, "In today's learning experience, teachers are including online materials and digital content in their lessons rather than relying entirely on textbooks. Most classrooms utilise a projector and interactive whiteboard rather than blackboard and OHP. Students expect to have a >

> **" Once costs reach the level of replacing an interactive whiteboard and projector combination, then the flat panel will win out. "**
> *- Darren Murphy, Genee World*

< certain amount of technology in the classroom and relate to the material better when it is presented in this fashion."

The growth of mobile technology, smart phones and tablets, is a strong influence in this sector. Students expect to find in the classroom what they have at home.

Paul Brown, DisplayNote Technologies CEO says:

"There is a tangible change due to the growth of tablet initiatives in schools. Students now expect to use more mobile technologies to enhance engagement and interactivity as part of their learning experience. DisplayNote software provides the vital link between the teacher at the front of the classroom and the students within the classroom, allowing content and displays to be shared across mobile devices."

DisplayNote is an application that allows many users to view and collaborate on shared notes from their own devices. It means that people can present information from one device, while others view, annotate, illustrate, discuss and share that information in real time from various devices.

Brown adds: "Using DisplayNote with a mobile device, the instructor can control their large format display from anywhere in the classroom, whilst students can also connect in real time, collaborate, save and review the content."

The tablet is not seen as a replacement for whiteboards but rather as a complementary solution. NEC and DisplayNote have recently partnered to give clients the added advantages of combining projection technology with next-generation learning software. A project in Germany, called 'Think, Pair and Share' showed that the solution helps to foster new collaborative learning methods while integrating various technologies, such as notebooks and tablets as well as projectors and multi-touch displays. The pilot was held at the Ludwig Maximilian University of Munich and the University of Applied Sciences in Düsseldorf.

Hitachi is in the same boat. Charlotte Hone, marketing manager at Hitachi Europe says: "Greater emphasis on audience participation led us to develop our latest interactive projector, the CP-AW2519NM. This projector contains Hitachi StarBoard software that allows users to annotate and interact with the material presented.

"Supplied with a versatile wall mount, this projector can be used to project onto any flat surface, a plain wall, a dry wipe whiteboard or even a table top."

Hitachi has also developed a range of wireless projectors. "Our CP-X2515, CP-X3015WN and CP-X4015WN projectors contain a wealth of features including optional wireless networking," says Hone, "alternatively, students or educators can use our 'Projector Quick Connection' application. This application enables wireless display of documents, images and web pages from their iPad, iPod touch and iPhone."

Luidia's solutions in this area are its eBeam products: eBeam Edge , eBeam Engage and eBeam Inscribe. Michelle Bulbring, Luida's head of marketing >

< for EMEA explains: "The great USP of the eBeam Edge is the ability to deviate from a focal point if necessary, by using the interactive device on surfaces where students can gather and work in groups, which means they are not confined to a permanent installation.

"As small as a TV remote control, eBeam Edge moves with the teacher from classroom to classroom or from the main whiteboard to any other surface within the classroom. The system combines an interactive stylus with a small receiver that magnetically attaches to any surface or whiteboard in seconds."

Vivitek has a combination of three products for the interactive classroom: NovoBoard, which transforms

Vtron's Active Learning Room concept deployed in Birmingham University by Impact.

non-interactive whiteboard into a dual-finger-touch whiteboard; NovoTeach, an interactive white board software programme; and NovoClass, which uses tablet technology for teacher/student interaction.

More schools need converting

Although the uptake of AV technology in classrooms has increased in the past few years, studies show that the thirst is far from quenched. Leonie Davis PR and social media manager at Epson says, "A recent survey by Epson has shown that interactive whiteboards and projectors are one of teachers' most wanted technology kits. This would indicate that the experience is not as interactive between teachers and pupils as it should be. It also seems like the need for this is constantly increasing."

The need for better AV technology for the teaching environment is not just about a small classroom situation. In higher education, brighter and higher definition projectors are needed for larger groups. Staffordshire University, for instance, has recently opened a new science facility that uses three Epson EB-Z8000WU projectors in the main lecture halls and further 42 EB-G5450WU projectors in meeting rooms

and science laboratories to display detailed scientific images.

Having good AV solutions also gives educational institutions a competitive advantage, as Peter van Dijk from Mitsubishi Electric Europe explains, "Clearly, every educational institution wants to be seen to be offering the best facilities. These days, this will invariably include audio-visual teaching aids. Not just in the classroom either. Use of more powerful projectors, such as Mitsubishi 7000 Series, is growing in larger teaching venues such as lecture theatres."

Getting from A to B

When it comes to the right solution for the specific educational needs things other than picture quality, need to be taken into account. Connectivity and flexibility are key elements to bear in mind when choosing the right solution for a classroom.

Unic Lee, senior sales engineer at Vtron Technologies, lists three points that should be considered to cater for a good interactive digital classroom:

"Firstly, there needs to be a software suitable for interactive activities. Without this, the touch screen will just perform like a normal TV or monitor. Software such as Vtron Vboard 6.0, Workshop 2.0 and VtronMedia can provide different platforms for interactive teaching."

< In the digital classroom, data needs to be sharable says Lee, "Cloud data sharing can provide teachers with more resources. It is the key point in the interactive

digital classroom. Vtron's VMeeting 3.0 system can establish a mini cloud for data sharing between different installations sites, even in different cities."

Finally, the equipment needs to be easy to integrate, flexible and convenient to use. "For example, an interactive flat panel that only has a single power cable and can connect wirelessly with the content is recommended. It's safer for the classroom and it's visually neater," concludes Lee.

Vtron's 65" VL Series (IDB VL6561) uses the Intel open pluggable specification (OPS) standard embedded PC which offers a single interface to connect with the computer.

Panasonic has also followed the wireless route. The company announced a few wireless products this year, which take away the 'what connector do we need' nightmare and allows content sharing from a PC, iPad or iPhone. One of these is Panasonic's PF50 series, which includes 42, 50, 60 and 65 inch models. The company also launched a new version of its Easy Wireless Stick, Panasonic ET-UW100, optional USB device for wireless projection to wireless-ready Panasonic projectors and professional displays. The ET-UW100 also enables wireless connection from any computer to the projector or display without any software downloads.

"Fewer cables also lowers the cost of ownership in products," explains John Gorman, marketing manager at Anders+Kern UK, distributor of PolyVision's eno interactive whiteboards.

"The eno boards are made of ceramic steel - porcelain-on-steel finish. They are dry-erase, magnetic and interactive. You can hang them on a wall or have them on wheels with no need to think about cables. You can even have them as an extended whiteboard, like on the eno Teaching Wall solution. You only need to have your projector powered up. This allows for more flexibility in the classroom and is also a greener solution for schools: low maintenance, virtually indestructible, no electricity and no need to upgrade the board."

The interactivity on eno whiteboards doesn't happen on the screen or the projector, it is in the pen. The eno stylus has a camera in the end that watches the eno surface and reads the microscopic steel dots on the board and is connected wirelessly.

Whether one chooses a projector-led solution or a flat screen will depend on the image size needed, the ambient light and costs. Very large flat screens are sometimes more difficult to mount and more expensive.

However Darren Murphy, channel partner manager at Genee World Limited, is positive about flat panel displays, "Ultimately. the flat panels such as the Genee Touch range of LED touch screen panels will win out. Higher demand and production will reduce costs. Our panels are produced with tempered anti-glare glass, so are be tough and resistant to daily school use. Once costs reach the level of replacing an interactive whiteboard and projector combination, then the flat panel will win out – there is no need for a projector, glare is avoided and they have multiple inputs for excellent connectivity."

Budgetary constrains are always an issue for schools. But higher tuition fees mean that parents and students have higher expectations in return for their money. Advanced AV technologies give universities and schools a value add, and this can become a unique selling point to capture and retain more students. ⌇