



Innovations Workshops

Visual display technology

Article

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July 2004

The rapid march of projectors, whiteboards and other visual display devices into schools has presented new opportunities for learning by seeing and doing. The breakthrough benefit of the data projector was that it displayed an image large enough for the whole class to see - and as such it was to change the use of ICT in classrooms. In July 2004 Futurelab organised a day bringing together educators, artists and software and hardware developers to investigate the future of large and small-scale visual devices in the classroom as learning tools.

Delegates began by reflecting on the historical lineage shared by visual devices from the epidiascope to the OHP, which first put images and text up high onto classroom walls, to the data projector which is currently so popular in UK schools. A central question posed during the day was: "To what extent are current developments built on good pedagogic practice and what should we anticipate in the future?"

Some delegates provided a history of whiteboard devices and their development. The earliest whiteboards it seemed "descended from a graphics tablet", a small tablet which designers could draw on with a stylus as a way of getting graphics into the computer in a more subtle and controlled fashion than using a computer mouse. Today, the central touch-sensitive board is often used in conjunction with extra resources, including hand-held tablets and voting devices, to lead to greater group interaction.

This, however, is not the full story, as a number of other visual display technologies, both personal and public, are becoming available and increasingly affordable. The workshop explored the benefits, limitations and areas for development of all relevant technologies and practices in this area.

Many areas of current strength and pathways to the future for the use of visual display technologies were envisaged at the workshop. One teacher who is working with students who are disaffected and lack motivation, and have been excluded by mainstream education (aged 8 to 16), noted that the use of interactive whiteboards has generated motivation and enthusiasm; "whiteboards have stimulated the use of ICT". Another suggested that they were forsaking the whiteboard in favour of the use of tablet PCs wirelessly linked to projectors.

The day also focused on the emergence of knowledge skills. It was noted that teachers fall into a category of employment known as knowledge work. Visual information on flipcharts, whiteboards and the like are central to productive work but they are hard to manage and retrieve over time. A large amount of their value is in their original layout, spacing and colour. Research suggests that it's best if we can store and recall such displays in the format in which they were originally recorded. Devices like the Quorum Tools tablet, which was demonstrated during the morning, serve as illustration of new type of device which will allow students to work together in a collaborative and visual environment.

In some schools a device known generically as a 'visualiser' has proved a breakthrough tool when linked to a data projector. It's a fixed camera device which projects whatever is placed on the platter below it, and has proved to be the most singularly successful visual display tool. "The visualiser has been embraced by every teacher in each class. It's a 3D technology that is easily managed and can be used to show a single object or to display a reading book for class reading," said one delegate.

"The visualiser ticks a lot of boxes - we even use it for stitching and sewing and reading around the class demonstrations - we do dissection and handwriting practice on it also."

Projection using 3D was a recurrent theme in discussions on the day, as in visual display we are largely stuck in a 2D world. "Some students find 2D hard," commented one participant. The designers present anticipated the arrival of the 3D interface on the computer, and eventually on projected displays, allowing the feeling of depth as a way of adding navigation. Displays at the front of the classroom were expected to grow and become 'wraparound' and contain many separate displays as part of the whole.

Another key element for discussion was the view that at present "we don't know enough about how visual thinking occurs as a cognitive process. We need to understand this if we are going to look at how best to integrate these tools". Perhaps in the future, the group thought, we will be taking the display from the wall and putting it into a circular collaborative table with touch screen sensitivity. imagine a large table with collaborative visual displays capable of finger or pen annotation and manipulation.

Emissive display technology was highlighted as a visual display tool of particular promise and one which is likely to provide display screens of various sizes in hand-held and large fixed displays. It was also thought likely that the age at which students become users of mobile phones is likely to continue falling. Phones are already powerful visual devices with 3-megapixel cameras, improving displays and (in the near future) hand-held projectors. Very shortly retinal display systems will provide tiny video displays so close to the eye that they will replicate the effect of a virtual 16-inch screen.

In summary it was thought likely that the future was likely to hold many developments at both ends of the spectrum regarding the large screen and personal aspects of visual display. In future it was thought that visual technology will be personal as well as social, with the mobile phone potentially acting as hub and personal interface to other school systems. A final thought from the group was that "we need to have a base level device in the classroom which will be proprietary. perhaps it will be whatever the mobile phone grows up to be".