

## **TRANSFORMING THE WAY WE LEARN – DOUG BROWN**

Thank you for inviting me to join you today. This is quite an historic occasion for me personally – this is the first time I've spoken at the Oxford Union and the first time I've delivered a speech in many years without the benefit of technology.

It was interesting to look at the provoking questions for today's discussion on the 'Beyond' website. Questions like, 'Is the new digital age the answer to the prayers of teachers?' and 'Are traditional methods of teaching being under-funded as a result of policy pursuing fashion?' Nice questions. Questions which don't have a simple 'yes' or 'no' answer. But, since we have limited time today, I'd say the answer to both is 'no'.

The so-called 'digital age' brings with it as many problems as solutions as we all recognise whenever our systems crash. And there is no question of under-funding any part of education, particularly teaching. ICT doesn't replace traditional teaching, it enhances it.

So what am I here for?

In one sense, I'm here to talk about technology and in another, that's the last thing I want to mention.

Technology is a tool, nothing more nothing less – a very powerful tool, a transformational tool and, sometimes, a tool of frightening potential. But a tool nonetheless.

I'm also here to talk about learning and where learning might go using this transformational tool of technology.

I'll probably take a number of digressions along the way and hope to paint a picture of a learning journey. A journey we're all engaged in in one way or another.

At this point I'd normally turn to my first powerpoint slide. That slide would be the first of several outlining the significant amount of money that the Government has put into technology in schools. Or I might outline the change that money has bought. I'd show a nice upwards-pointing chart with bars growing over time to represent increasing money or connectivity. But I can't

do that today, so let's see if I can paint that picture in words.

Between 1998 to 2004 Government is investing one point eight billion pounds in ICT in schools. One point eight billion. That's a lot of money. On the other hand, doing a simple sum, it's about two hundred and fifty pounds for every school child. Not so much now, is it? What will that buy in your local Dixons?

And what has that money bought so far?

Almost every school in the country is now connected to the Internet. That seems pretty basic these days but only four years ago did you really think the Government would meet the commitment to connect all schools? It almost has. We almost have. Individual schools have. The figure stood at 97% last April and I'm confident that it will be over 99% when we carry out this years' survey.

We have excellent computer to pupil ratios with some startling changes, particularly in primary schools where

the numbers have improved dramatically. The ratio was 17.6 pupils for every computer in 1998 and this has improved to 11.8 per pupil in 2001. And it's getting better. But what does this mean in reality? Just four years ago there would have been less than two computers per class, often just an add on to the lesson or with clever strategies to manage numbers. Now it can form part of the natural group work in a primary classroom.

Teachers' confidence and competence to teach using this technology has also improved over the last four years, partly through the New Opportunities Fund sponsored training and through the increase in teachers' personal access to computers.

Latest statistics tell us that nearly three quarters (73.4%) of all teachers are confident to teach using ICT. Over 70% (72.6%) of teachers have received training in the use of ICT. And nearly as many (67.3) have personal access to ICT. That's good progress in a comparatively short time. It really is a short time and I will come back

to this.

Between 1998 and 2001 the percentage of pupils achieving Level 5 and above in Key Stage 3 tests for ICT rose from 56% to 65%. And IT is the fastest growing subject in the National Curriculum.

There's an average of 2.7 computers with Internet access in each school for management and administration and there's been a 50% reduction in the pages of text automatically sent to schools in 2000-2001 compared to the 1999-2000 school year. This reminds me of the comparison between the paperless office and the paperless toilet – both are technologically possible but not necessarily socially acceptable.

I think that's enough numbers for the moment. That all sounds pretty impressive – well, it does to me – and if I'd used powerpoint you would have had some impressive looking slides. But it's all numbers – very nice numbers from my perspective and very powerful. But so what?

Why invest in ICT at all when there are so many demands on Government funding? Believe me, someone sitting in a little office in the Treasury in Parliament Street is probably balancing the need for more ICT in schools against buying more cancer scanners for hospitals in the North East. That's one decision I'm pleased to say is not down to me. But someone has to take it and balance the risks that it's the right decision.

Just a few months ago our Secretary of State, Estelle Morris, gave a major speech on the future of ICT in schools. She referred to it as the equivalent to the unravelling of DNA or the development of the combustion engine. She said, and I quote, "It is the trigger that can bring about a revolution in how we teach and how pupils learn...".

So why invest in ICT? It's not because it's shiny and new. And not because it's the latest fad. Government invests in ICT because it:

- transforms teaching and learning and improves service delivery
- this raises standards and reduces teacher workloads
- and in doing this we will reduce the risk of social exclusion
- and reduce the ICT skills gap and increase employability
- this in turn promotes economic growth
- allowing us to invest more in ICT to further transform teaching and learning

A virtuous circle.

That's all very well, but you'd expect me to be enthusiastic about the benefits of ICT – it's my job after

all. But we don't just blindly follow a policy lead. If the policy didn't work Ministers would change it.

Those of us involved in ICT believe it transforms teaching and learning and teachers who use it every day in their classes know it raises standards. But we always have to prove it. It is difficult because often ICT acts as a catalyst. Putting ICT in by itself may not have a major impact, but with the right ingredients then we can see startling changes.

And we have. Time and again, with different studies and different research projects. We've published six reports in the last six months that all demonstrate the impact of ICT.

And Becta – the British Educational Communications and Technology Agency – has recently done more work in its analysis of QCA data and Ofsted assessments. This hasn't yet been published but I want to share the main findings with you.

In a nutshell, Becta has identified a statistically significant relationship between ICT and attainment. Using statistical modelling techniques that I am sure 50% of you will both understand and agree are exactly the right models. I am equally sure that 50% of you will equally firmly disagree the modelling. However, Becta found that

- ICT has a direct relationship to pupil performance in tests, in addition to the relationship between these results and teaching or leadership.
- ICT also has a further influence in enhancing the quality of teaching which, in turn, influences test results.
- The use of ICT in schools and the development of pupils' ICT skills are not strongly determined by social background.
- This counters any argument that the relationship between ICT and attainment is due to an

association between ICT and social privilege.

The evidence about the effect of ICT is increasing every day. The sheer weight of evidence is becoming incontrovertible. And our understanding of the effects of ICT is improving.

We know that home access to ICT is important for pupils and we also know that those households without access are those with a single parent, those from minority ethnic backgrounds and those from lower social groups. We need to take care that we don't create new excluded groups by the emphasis on ICT – we need to avoid the so-called 'digital divide'.

The digital divide is itself a complex concept. At one level it is simply whether we have access to ICT or not. At another, it's about the type of access – is the computer powerful enough to run multimedia software? Is the Internet connection fast enough? Is it portable? We need to re-define traditional concepts of deadweight and additionality. A simple 'have – have not'

relationship is no longer right given the tremendous speed of change in ICT.

With this in mind, we might argue that ICT is likely to have a differential impact according to the extent of home ownership. We might argue that ICT will raise the standards of lower-achieving groups to a greater extent than for higher-achieving groups.

The argument might go something like this:

- teachers feel that ICT has a positive impact on teaching, pupil motivation and pupil performance;
- pupils are positive about the impact and use of ICT in teaching and learning;
- the majority of pupils have access to ICT in the home and this plays an important role for schoolwork as well as for leisure activities.
- but, for those without access to ICT at home

(particularly those in the lower socio-economic groups) access at school is crucial.

- ICT is more likely to be a motivator for these groups and they are more likely to have positive attitudes towards the use of ICT for school work.

Taking this argument forward, it is these groups who are likely to gain the greatest benefit from the use of ICT at school and – in broad terms – they are also the ones who are likely to have the lowest attainment levels on entry to the school.

Since access is largely related to social class and economic status we might suggest that the provision of adequate levels of ICT in the classroom will disproportionately benefit the lower achievers and thereby help to reduce the attainment gap.

Of course, the relationship between ICT and attainment is a complex one, and something we're still only just beginning to understand.

Normally, you'd be due another powerpoint slide by now. A nice diversion to keep the audiences' attention. But this is a technology-free zone. So, instead, I think it's time for some more numbers.

Did you know that 99% of school children use a computer and that 73% use the Internet? Or that an average 13 year old uses a computer for 11 and a half hours each week? Or that Internet usage at school increases with age, from 16% at Key Stage 1 to 66% at Key Stage 4? And, contrary to popular opinion, this is not just to play games! Kids at Key Stages 1 and 2 mainly use computers at home to play games but this switches to mainly using computers for homework at Key Stage 3 and above – a switch from 88% games to 85% homework.

So what, you might ask? And so what indeed. More numbers. But what these numbers suggest is that the genie is out of the bottle. Kids like ICT. Kids use ICT. And kids are way ahead of us. ICT will be used to

enhance learning. Children have already gone beyond chalk and talk – the question is not IF but how, and where for best effect – and perhaps even more challenging – can we cope with or even assess the different outcomes.

I spoke earlier about taking a learning journey and in your delegate packs you'll have a perfect example of an ICT learning journey. If you look inside the 'Transforming the way we learn' booklet you'll find 'a day in the life of Uzman'. This attempts to picture what it might be like if ICT is used across the curriculum.

This maps out a typical day for Uzman in his secondary school. He arrives at 8.30am to retrieve the homework he e-mailed to his user area on the school system the evening before. He uses different technologies throughout the day in his various lessons. He ends the day by visiting the school computer club to work on developing part of the school website.

Idealistic? Yes. Realistic? No, probably not. At least

not at the moment, and not in every school, but that time is coming. As ICT becomes more embedded across the curriculum teachers find more uses for ICT, find it works better in some circumstances than others in meshing with personal teaching styles and find it improves results. And it will.

Why do we make such a big deal about computers in classrooms? Why indeed. As I said earlier, those of us involved with ICT in schools know it has a powerful impact on what happens in the classroom and what happens across schools as institutions. But we still need to prove it –and against traditional measures. ICT does more but even against traditional measures.

We still need to demonstrate the effects. Maybe two thousand years ago the Romans had to prove using a stylus was effective in the classroom rather than learning by rote? Who knows? I look forward to reading the report and economic appraisal when it's found in the ruins of Pompeii.

But ICT is still new. Yes, there have been computers in schools for 20 years and more. But not in anything like the volume today. The last two to three years have seen a massive change in the amount of kit in schools and the functionality of that kit and – more importantly – a massive change in the uses teachers put it to.

With any future technology gazing it is often said that we over-estimate the speed at which something will have an impact but under-estimate what that impact will be. It is said that there will be more technological change in the next 20 years than in the whole of the last century. I don't know what this will mean in practice, but if we take transport as an example, then in 1903 we had the first manned flight (Wright Brothers) and at the end of the last century 36 million people went through one airport (Heathrow). Imagine the social turmoil if that level of change had happened in 20 years. Last year we saw the first space tourist – a similar change would mean 36m people flying from the Oxford Shuttle launch site by 2020!

This may be science fiction, but we have real examples of excellent practice using ICT in classrooms today.

The ICT in Practice Awards run by Becta in partnership with BT, the Times Educational Supplement and others attempt to find good solid practice in the classroom and other parts of the education system that can be held up as an exemplar. Not the absolutely amazing that only a handful of others could possibly match, but good practice that could inspire other teachers to develop their own classroom practice.

A nice example here is a teacher called Richard Heppell. He came up with the idea of teaching some biology lessons in a 'Who want to be a millionaire?' format, projecting answers onto a screen for kids to chose. Not difficult to do, but someone had to do it first. A simple idea, and an effective one. It engages kids. It makes them notice what's going on. It makes them think.

By the way, have I mentioned that 710 million pounds is going to schools through the Standards Fund in the next

two years? More in the next two years than in the previous four? Well, it is.

And we're developing plans to put the National Curriculum online through the Curriculum Online initiative. This is a world first for the provision of online curriculum resources on a national scale. It also represents a major new style of working between public and private sector stakeholders

So, what will Curriculum Online do? It will:

- save teachers' time by aggregating the most useful and effective digital learning materials and making lesson planning less time consuming
- develop informed purchasing by schools by offering a framework to select appropriate learning resources through ease of use, ease of selection and choice
- recognise the changing role of the teacher and the context of the learner - e-Learning will enable

individual learning pathways, directed self study,  
development of home/school relationships and  
extended learning environments

- Curriculum Online will also assist in breaking down any socio economic barriers to opportunity – giving access to learning resources at school, at home, in hospital and – let’s face it – virtually anywhere.

Curriculum Online places us at the forefront of those countries that see value in the use of ICT in education. We are the word leader.

One of the people in my office keeps asserting that we’re the world leader in ICT. He also tried to get me to call this talk “Cyberpunk’s got nothing on us”. An interesting title, I thought, but I’ve got no idea what it means.

The art of drafting speeches is to tell people what you’re going to say, say it and then tell people what you’ve said. I was quite upfront at the start of this speech by saying I’d make some digressions and take a

wandering path. Hopefully it's kept you interested. Hopefully you've heard the message and read between the lines. Because I have to say I'm not sure where 'Transforming the way we learn' will end.

Would "Cyberpunk" be more illustrative? A load of teenagers with spiky hair plugging themselves into and living in a virtual world. Anarchy and social revolution versus the establishment and big business? And here I am, the representative of the establishment in this room, arguing for change. Perhaps the "cyberpunk" here is really me? Minus a few years, of course!

ICT is a transformational tool – there's no doubt about it. It's how we use it that matters. But what we can't do is future-gaze too far. Somehow I don't think the "Cyberpunk" world is just round the corner. Maybe in the far future, but not near in the sense that Government needs to think – Government often thinks in five year cycles, in Spending Review cycles, in terms of what money is available and what money will buy. But what will ICT be like in even three years time? Will we

still think in terms of boxes on desks?

We get industry leaders together every so often and ask them to tell us about the future – at least as far as their business plans allow. They all tell us we're due for a big change in technology. We're due for one of those leaps that happen every so often that transforms things. But they can't – or won't – tell us what will really happen to technology. It'll get more powerful. It'll be smaller. It'll be more portable. Great, but we can all guess these things.

We need to think in more realistic terms. Good computer to pupil ratios in schools means lots of boxes on desks or boxes in cupboards. That means better tests results and a new way for teachers to manage their workloads. But it also means less space in classrooms. It means more heat in classrooms and air-conditioning. It means needing staff to make sure the kit functions. It means planning for replacement and longer-term sustainability. There are two sides to every coin and we're all aware of this.

How will we ever prove that ICT really transforms the way we learn, produces better test results and, thinking back to the virtuous circle I mentioned earlier, improves the economy? I don't know. And increasingly I'm not sure I care. My colleagues within the Department and within the Treasury will still expect us to show the evidence every few years to justify funding. That's right and proper. We need to justify public spend. But that's not what it's really about.

It's about getting providing the richest possible learning experience for our children and ensuring skill development which will empower them in the knowledge economy of the future so that they too can a productive, happy and fulfilling life. Isn't that what it's really about?

I'm not bothered about the technology but I am bothered about what it will do. And I'll argue in favour of it as much as I need to for as long as I need to. ICT transforms schools – I've seen it with my own eyes. But

ICT isn't the future, it's the here and now. Climb on board or miss the boat. And help us transform the way we learn.

On a final note, I hope the absence of technology hasn't been too painful for you. But just imagine this equation – one palmtop plus one projector in one small shell equals a paperless and wireless presentation. The next time I speak here I hope to be able to beam my presentation directly onto your irises with my technology. Now that's the 'cyberpunk' technocrat in me talking!

Once again, thank you for inviting me here today.

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