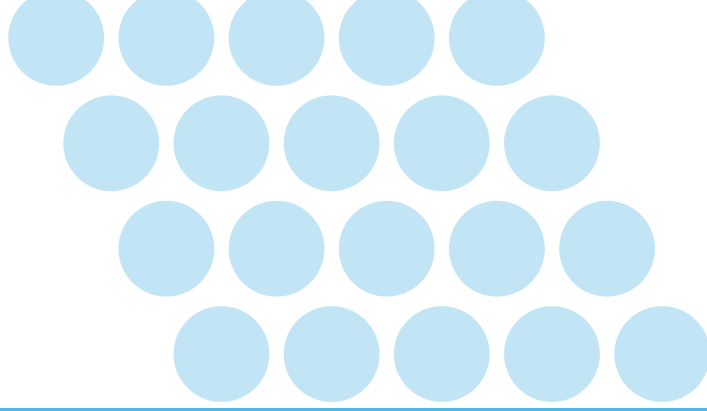


White paper

ICT in education –
enabling and sustaining
personalised learning



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Foreword

The “linear teaching” model is becoming obsolete. Today’s brave new world of school-wide podcasts, managed learning environments and self-assessed online course materials is proof that after so much talk, we really do have to think differently about how children are being educated.

These days, certainly within education, we should consider access to technology not as a service, but as a right. Indeed, once the home provision of “always-on” technology becomes ubiquitous, opportunities to improve educational outcomes and to improve life chances will undoubtedly multiply.

Consider a hard-pressed low-income family with a subsidised leased laptop from school and a low cost filtered broadband connection from the council. Such a scenario would deliver benefits to three key groups:

Pupils

- Immediately, pupils can reinforce classroom learning with online content. The open channel between teacher and pupils allows greater personalisation as the teacher can quickly signpost pupils online and provide feedback earlier.

Parents

- Parents are encouraged to consider greater involvement, checking attendance, liaising with in-school departments (SEN, EAL etc) and being able to participate more actively in school life.

Communities

- Online clusters of like-minded parents can and do have powerful voices to instigate change and maintain an open dialogue with schools. Online access to health information, council functions and job opportunities empowers whole communities in ways that traditional outreach cannot tackle. Parents themselves can engage in adult literacy and numeracy programmes thereby increasing employability.

Of course, technology alone is no panacea. Without a clear strategic plan, ICT will never deliver its real potential, and sadly there is still too much funding emphasis on the ownership of hardware, with the expectation that learning somehow just happens. To even out this imbalance, it is vital to increase access to broadband since, without connectivity, there will soon be little point in even having a computer.

Once we grasp the importance of “always-on” technology as a right, there will undoubtedly still be work to do – changing our methods and even the way we measure and achieve educational outcomes – but ultimately, we will be profoundly thanked by generations to come.

“These days, certainly within education, we should consider access to technology not as a service, but as a right.”

Personalised, lifelong learning

In 2004, the then Secretary of State for Education and Skills, Charles Clarke, presented Parliament with the Government's Five Year Strategy for Children and Learners.

This comprehensive document explored the development of our modern education system, setting the scene for the educational environment we find our children in today and exploring the reasons for the vital reforms the Government is now in the process of implementing. Importantly, the Five Year Strategy for Children and Learners demonstrates how the fundamental changes to industry, employment, society and technology over the past 60 years have completely changed the requirement for education and training, and how an education system originally designed to deliver only a basic minimum entitlement to education for all must now evolve to meet the increasingly sophisticated demands of society.

In essence, the most significant change to our education system, both in ideology and practice, is the shift towards lifelong learning, personalised education and self-directed learning. The vision for this system, as outlined in the Government's paper, is for a nation where:

- Every child gets the best possible start in life – with integrated services focused on the needs of parents and children, not chopped up according to provider
- Every primary school offers high standards in the basics, but in the context of a broad, rich and enjoyable curriculum
- Every secondary school offers excellent teaching, an exciting curriculum, and a positive and attractive environment
- All schools are extended schools, community schools, healthy schools, inclusive schools, and enterprising schools (with real links to business)
- At 14-19, every young person has a pathway to suit them that fits them for work, further learning, and for life as an adult; and has a wide range of activities outside school or college to enjoy and take part in
- Every child and young person who is in difficult circumstances gets the extra support they need without stigma
- Adult learners can all get and build the skills they need for success in employment – because employers are in the lead in designing and delivering training, working with highly responsive colleges
- Our nation benefits from a thriving university system that gives excellent teaching to all with the potential to benefit; which provides the nation with world-class research capability; and which works with business to provide the skills the nation most needs and to translate research into innovation effectively

“The most significant change to our education system, both in ideology and practice, is the shift towards lifelong learning, personalised education and self-directed learning.”

The significance of ICT on learning outcomes

It is clear that this transition from ‘across the board’ education to a more personalised approach will have far reaching implications for every aspect of education delivery.

What is certainly evident is that very idea of tailor made education could not have been conceived without the advent and increasing influence of technology – both within education and society as a whole. Not only has technology driven the need for a change (creating a faster-paced society as well as a different employment landscape), but technology will also be vital in helping to facilitate that change, offering the ability for children to develop an attitude towards and access to learning more appropriate to the needs of their generation.

Naturally, the Government is not blind to the importance of ICT as an integral part of its strategy for lifelong learning, both within schools and in the home. Indeed, the Five Year Strategy for Children and Learners concludes that ICT for Primary schools is a ‘powerful tool for assessing individual progress and personalising the needs of the child’ and within the secondary system ICT ‘is a powerful tool for learning, helping teachers explain difficult concepts, giving access to a huge range of examples and resources, and engaging pupils easily. It is also a vital tool for personalisation.’

One of the keystones of personalised learning will be the creation of individual online learning spaces for all schoolchildren (due to be implemented by 2008). These will act as e-portfolios to support and store a child’s work as well as offer the opportunity for learning, the sharing of work and ideas, discussion between peers and teachers and aid the individual monitoring of every child’s progress.

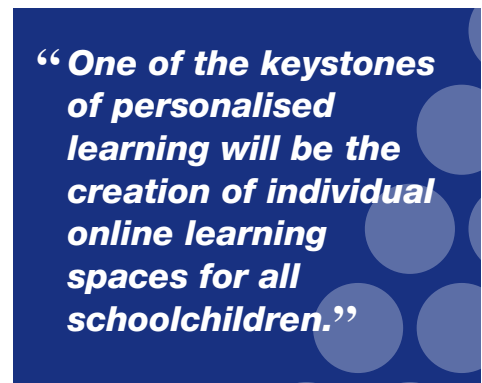
The Government isn’t just interested in ICT for the sake of it. Not only can ICT actually aid in the delivery of education and improve administrative efficiency within schools, but there is also statistical evidence that increased access to ICT for children has a measurable benefit on educational outcomes – particularly exam results. The ImpaCT2 study, for example (published in 2003) revealed the following improvements in results for children with access to ICT:

- Statistically significant gains in Key Stage 2 English and Key Stage 3 science, equivalent to a term’s progress in both subjects
- Gains representing over 50,000 pupils moving from a grade D to a C in GCSE science
- Gains representing 10,000 pupils moving from a grade D to a C in GCSE design and technology.

Interestingly, the ImpaCT2 study also discovered that researchers into the use of ICT in education have often measured the ‘wrong’ things: ‘looking for improvements in traditional processes and knowledge instead of new

reasoning and new knowledge which might emerge from the ICT use.’

In terms of educational outcomes this is an important point to consider. ICT should not just be viewed as a different way of teaching children the same information, but a way of helping them to learn new skills, to understand different pathways to knowledge and to become better prepared for the future. With this in mind, those looking to measure the significance of ICT on learning should perhaps look less for the achievement of higher grades and instead to the development of perhaps less tangible skills and levels of understanding.



“One of the keystones of personalised learning will be the creation of individual online learning spaces for all schoolchildren.”

The digital divide

How far from the ideal scenario – a complete bridging of the digital divide, one-to-one access for all children, broadband access for every home – is the UK currently, and what are the barriers to personalised learning that still exist to individual children, their schools and their families?

In its 2004 publication, Five Year Strategy for Children and Learners, the Government concedes that:

“We also fail our most disadvantaged children and young people – those in public care, those with complex family lives, and those most at risk of drug abuse, teenage pregnancy and involvement in criminal activity. Internationally, our rate of child poverty is still high, as are the rates of worklessness in one-parent families, the rate of teenage pregnancy and the level of poor diet among children. The links between poor health, disadvantage and low educational outcomes are stark.”

Indeed, the report goes on to demonstrate that socio-economic group is a stronger predictor of educational attainment than early ability: that even brighter children, if they lack the advantages of socio-economic stability will still fall behind their peers. This weakness in equality of opportunity lies at the heart of the digital divide, where access to ICT in the home has become the norm for many, but still remains an unaffordable luxury for significant numbers –arguably those who need it most.

ICT provision in schools is in fact moving forward at an impressive rate, with government targets generally being met, broadband now available in all schools and (at the last count) computer to pupil ratios of 1:8 in primary schools and 1:5 in secondary schools. However, these figures fall short of the ideal 1:1 access, and even with improved provision within school this still leaves the problem of the digital divide at home.

ICT at home is becoming an increasingly important part of ‘joining up’ the delivery of education, encouraging learning outside the classroom and enabling pupils to collaborate on projects at home, submit homework, communicate with teachers and peers and feel more connected with the school community. In addition, ICT in the home encourages learning for adults and provides vital access to important information sources and government services, as well as helping to develop more up to date communication skills.

In terms of ICT provision in the home, figures released in August 2007 from the Office of National Statistics showed that the number of UK homes with Internet access has increased to 15.23 million and of those 84 percent have a broadband connection. The latest statistics from the ONS on PC ownership (2005) show that overall in the UK, 65 percent of households have a PC (95 percent of households in the highest income bracket – and only 29 percent within the lowest income group).

With broadband access to the Internet now widely agreed to be a right rather than a privilege, this divide between the haves and have-nots must be addressed before we begin to see measurable improvements in education among children from the lower income brackets.

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Home computing

The Government's strategies for education over the next few years demonstrate a clear commitment to increasing ICT provision for pupils.

Changes to funding – enabling schools to manage their budgets over three years for example – have been implemented to enable bursars to take greater control over spending strategies into the longer term, and principles such as personalised learning as well as targets for increased ICT access are all helping to move things in the right direction.

In addition, there is growing interest in increasing access to affordable home computing, through initiatives such as Computer for Pupils, and laptop schemes – where families pay a small monthly fee to 'lease' a laptop over a three year period, often leading to outright ownership at the end of the scheme.

Such schemes provide an excellent opportunity for schools to exploit the full benefits of ICT in learning, significantly increasing access to IT for many more children (including those from poorer families) and enabling schools to implement much more ambitious IT strategies to bridge the gap between home and school learning.

Naturally, these schemes take time to organise, but many of the challenges associated with setting up and running a laptop scheme can be overcome with the support of a reliable IT provider and a good finance partner.

Some aspects to consider:

Finding a champion

Successful laptop schemes usually rely on the commitment and skills of a member of staff (not necessarily from the IT department). Introducing a scheme requires considerable organisation and sustaining it may take several hours a week.

Some IT suppliers offer laptop schemes that manage much of the administration and financial organisation, significantly reducing the workload for schools.

Financing

There are a number of ways of raising funds for home computing schemes: parental donations, charity fundraising, outright purchase through existing funds or finance. Schools must choose the method most appropriate for their needs in both the immediate and longer term.

Generally, successful schemes draw on several financial resources to develop a sustainable IT solution, rather than relying on a single source that may not offer stability into the longer term. A good finance partner will be able to work out the right mix of funding solutions.

Security

Looking after computers on site is one challenge; implementing security measures for laptops at home is quite another. Schools need to find solutions to practical measures such as secure log-in, as well as address issues such as free (unmonitored) access to the Internet.

Support at home

Schools cannot necessarily rely on support from all parents, and, of course, even small monthly contributions may be out of reach of some families. Schools may need to look at ways of subsidising families who cannot pay, and ensuring payments can be made in cash rather than by direct debit when necessary.

In addition, since many homes still lack Internet access, any laptop scheme must ensure that pupils can benefit from school software and access to school information resources at home instead.

Sustainability

As identified by the e-Learning Foundation: "The education world is littered with examples of one-off funding for projects that grind to a halt three years on when the equipment needs replacing."

For any scheme to be successful, it is vital that schools adopt a long-term strategy that includes sustainable funding solutions, maintenance of equipment, support and insurance.

In addition, there is a need to sustain the benefits of laptop access beyond the initial three-year agreement. Schools might look at ongoing support and education for families with laptops, to encourage ownership once the equipment has been paid for and a greater emphasis on lifelong learning.

“The education world is littered with examples of one-off funding for projects that grind to a halt three years on when the equipment needs replacing.”

Funding

Once a robust strategy for ICT implementation is in place, schools can begin to look at the best way to fund their plans. There are several options to choose from, and schools often adopt a combination of funding sources:

Grants

The government is not resting on its laurels in its support for increasing ICT provision, and schools and local authorities receive funding for ICT through several grants:

- Devolved Formula Capital
- School Development Grant
- Grant 121: National Digital Infrastructure for Schools
- Grant 122: Electronic Learning Credits (eLCs)
- Grants 125 and 210: Computers for Pupils

It is worth noting that there is more funding available for ICT than ever before, either through direct sources (such as Grants 121, 122, 125 and 210) or through greater flexibility to direct funding towards ICT provision where necessary (through Devolved Formula Capital or the School Development Grant). Indeed, the growing challenge for schools, as we have seen, is not so much trying to raise funds for ICT, as developing the long-term strategies necessary to improve the beneficial outcomes of increased ICT provision as much as possible.

Only one of these grants – Computers for Pupils – tackles the problem of increasing ICT provision in the home. This initiative enables disadvantaged secondary pupils resident in the ten percent most deprived areas of the UK who also receive free school meals to access equipment and safe Internet connectivity at home. Under the terms of this grant, the equipment remains the property of the school.

Independent organisations

As well as the Government, organisations and charities such as BECTA and the e-Learning Foundation are committed to improving technology access for pupils both at school and particularly at home. The e-Learning Foundation performs three main tasks:

- Provides a free advisory and support service to help schools develop the most appropriate strategy to achieve high levels of home ICT access
- Acts as a fundraiser and grant provider to help schools develop their own sustainable sources of income
- Actively campaigns at government level to keep the digital divide at the forefront of public consciousness

Charity status

Schools can manage donations for laptops from parents by setting themselves up as a charity (Setting up a scheme through the e-Learning Foundation also offers schools charitable status). As a charity, schools can recover Gift Aid from every donation, boosting funds even further.

Finance

Using a specialist finance partner to cover the cost of the laptops, insurance and maintenance requirements can offer stability and reduce the paperwork associated with setting up a laptop scheme. This approach can also offer a more sustainable long term funding solution than fundraising or government grant.

“The growing challenge for schools, is not so much trying to raise funds for ICT, as developing the long-term strategies necessary to improve the beneficial outcomes of increased ICT provision as much as possible.”

Strategy first

Funding is traditionally seen as the most significant challenge when trying to improve educational outcomes through increased access to ICT. But in reality that may not be the case.

That is not to say that ICT is cheap, or easily affordable, it is simply that there is a more important step to consider first: without a robust, sensible and sustainable strategy for ICT implementation, no matter how much funding becomes available, schools can never hope to achieve the potential benefits that can make a real difference to lifelong learning.

Naturally, every school is different, and there is no 'one size fits all' strategy for ICT adoption. With such a diverse range of catchment areas, as well as different economic, cultural and geographical needs, the challenges and opportunities will clearly be weighted in different directions within every school. But developing a well thought out programme for ICT should always be the first step. Only then is it possible to determine how much financial resource may be necessary over the immediate, medium and longer terms, and which routes to funding will prove the most sensible for every stage of the process.

With funding available from several sources (as we will explore later), it is vital that schools have a clearly defined set of priorities and long term goals, including not just how best to increase provision over time, but also clearly defined metrics for success. These might include outcomes and benefits for pupils and their families, as well as improvements to efficiency and effectiveness within the school system.

Schools should consider where they are currently in terms of ICT provision, access ratios, home computing initiatives etc, and compare that to where they would like to be in one, five and ten years time. The strategy should include goals for improved educational outcomes for specific pupils – those in exam years perhaps, or those identified as disadvantaged – and consider how ICT might best be used to facilitate change. Remember, increased ICT provision, either in schools or at home will have implications for teachers. The strategy should include plans for training and ensuring adequate resources to tackle increased workload.

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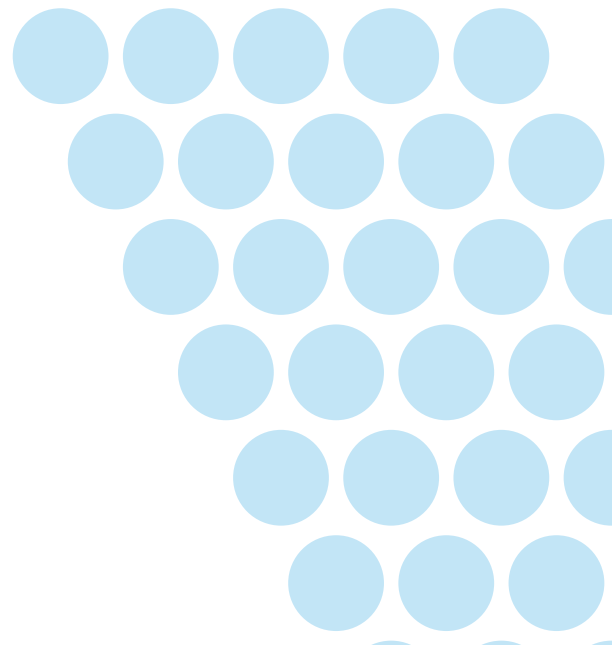
Project management checklist



Observe	(the problem)
Orient	(a plan, a cost analysis and a timescale towards the problem)
Decide	(the vision and execution)
Attack	(launch and immediately plan for “when the dust settles”)
Report	(document, take feedback, tweak and refine)

Finally

If any e-learning project involves parents or pupils, under no circumstances go to them with just an idea or a half-baked project. Keep it under wraps until there is a finished product to launch. This ensures pupils and parents won't feel let down or frustrated by any delays, and the scheme can confidently hit the ground running.



Case study: Addington School

“Once feasibility had been proved by satisfying ourselves that we could successfully roll out the project, we committed and signed on the dotted line. From this point the project management was less about background research and ‘evangelising’ and more about launch-oriented organisation with a final date in mind.”

“We launched very successfully in October 2006. We doubled the scope of our scheme six months later and we continue to grow. Third or fourth time round, the project managements is getting a lot swifter, a lot more refined. This allows time to electronically document how it is done and to recruit assistance and automate proceedings next time.”

Essential questions:

- Does the scheme have the complete support of senior staff and governors (is it believed to be essential)?
- If you cannot afford the project straight away can you source alternative funding or commercial funding solutions?
- Is the vision inextricably linked to raising attainment, standards or life chances (or all three)? If not, don't bother.
- What is the best case? What is the likely case? What is the worst case?
- Do you have an 'ICT champion' able to communicate ICT plans and strategy both internally and to suppliers and parents?
- Does the project have to come under the remit of ICT as a curriculum subject?
- How will you measure success in terms of key performance indicators?
- If the project manager disappeared, is there sufficient knowledge transfer to ensure the project will survive?

Checklist

To develop an e-learning strategy or laptop scheme, it makes sense to plan backwards, i.e. what is it the school wants to end up with? This vision will not only largely determine hardware and software needs, it will also raise inevitable questions about costs and timescales that must then be resolved before progressing further.

Costs

- Perform due diligence on a number of suppliers, not just the regular school incumbent
- Look for savings that can be made by removing unnecessary software

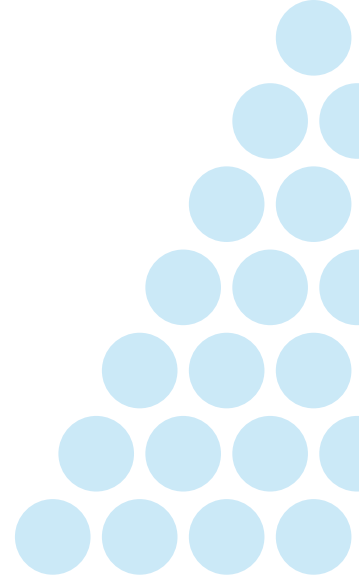
Timescales

- Take your best estimate and double it
- This allows for delays and keeps expectations simple

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