Key findings for further education colleges based on evidence from the evaluation of the ICT Test Bed Project

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The ICT Test Bed Project

The ICT Test Bed Project (2002-06) was initiated by the Department for Education and Skills (DfES) to explore how ICT can be used to support the Government's wider agenda for education reform. The project took a holistic approach to ICT implementation in three ICT Test Bed areas of relative socio-economic deprivation. A total of £34 million was invested over four years, which gave the 28 ICT Test Bed schools and three FE colleges access to very high levels of ICT hardware and appropriate software. The funding also provided for investment in staffing release and training support to make the most effective use of this investment. ICT Test Bed work focused on using ICT to:

- raise standards and performance, especially in the areas of school and college improvement, student attainment, and raising the quality of teaching and learning
- enable more effective leadership and management in schools and colleges
- help teachers to concentrate their time on their core task of teaching
- enable more effective collaboration between schools and their local colleges
- provide wider learning opportunities to students, their families and the wider community in a home environment.

All three ICT Test Bed local authorities have high concentrations of deprivation compared to the national average, though manifest in different ways.

Methodology

The ICT Test Bed Evaluation is based on three strands of data collection and analysis:

Quantitative data

- Benchmarking of changes in performance on national tests against matched comparator schools and national averages.
- Modelling of e-maturity to track institutional change over four years.
- Annual surveys of teacher, pupil and parent attitudes and working practices.

Qualitative data

Site visits including classroom observations, interviews with local authority managers, headteachers, teachers, administrative staff, technicians and students, and document analysis.

Action research data

During the project, more than 90 teachers and para-professionals from the ICT Test Bed Project institutions completed 116 action research studies of their innovative work with ICT. 47 of these were written by staff from the FE colleges.

The final summative evaluation reports of all three strands, together with a number of more detailed evaluation reports from the four years of the project listed in Appendix A, will be made available on the ICT Test Bed Evaluation website [www.evaluation.icttestbed.org.uk].

Key findings for the Further Education (FE) sector

These key findings have been drawn from multiple reports authored by the ICT Test Bed Evaluation team.

In each of the three FE colleges, ICT investment was focused in three different departments (none of which was ICT). Findings relate to these specific departments in the main, rather than to the entirety of the colleges. The very small sample size must be borne in mind.

Learning and teaching

ICT had a positive impact on pedagogy

- Teaching became more interactive, with learners increasingly engaged with interactive equipment, games and other activities. This was largely due to the introduction of interactive whiteboards.
- Staff report that they can get through more in a session and achieve an increased pace when using technology. While this could be too fast for the less able learners (and also slow the pace 'too much' for the more able learner), having ICT available has helped teachers to provide differentiated activities for learners of all abilities.
- The VLE has had a positive impact on teaching and learning. Students were able to use resources on the VLE for revision, consolidation or to catch up if they had missed classes. Tutors were able to use the VLE to create learning activities and a range of tests which were automatically marked and provided instant feedback to the students on their performance. Tutors were also able to use the resource bank they had built in the VLE to provide differentiated and personalised learning experiences.

- Students' questionnaire responses indicate a promising rise in the importance of problem solving with the computer. Other forms of active learning, such as the use of discussion groups, have shown major increases. The responses of tutors are also heartening; while the tutor remains the expert within the classroom, there are signs of new ways of working, for example through presentational software and by facilitating student e-discussions and e-communication. This may well reflect increasing confidence of both staff and students, as these are often perceived as more risky activities.

ICT improved both formative and summative assessment processes

- Interactive learning activities in the classroom and on the VLE, research and project work plus new questioning methods, are enhancing formative assessment.
- The development of online individual learning plans (ILPs) and e-portfolios is beginning to change the landscape of summative assessment.
- ICT is increasingly being used to assist in the collection, marking and return of student work and assignments.
- In 2006, 47% of tutors stated that students were involved in the processes of setting learning goals and assignments, setting their own timelines and monitoring their own progress, either frequently or most of the time. This was up from 16% in 2003.
- In one example, ICT facilitated work-based assessment supported by PDAs and digital cameras. These tools enabled records of the achievement of competence in the workplace to be made, as the students demonstrated it.

ICT engaged and motivated learners

- The overwhelming majority of students surveyed reported favourable attitudes to both attending college and doing their work, with satisfaction reaching ceiling levels by the end of the project (50% 2003: 99% 2006). However, gender differences between the 2003 and 2006 samples mean that the finding should be treated with caution.
- 83% of tutors who responded to the end of project questionnaire, disagreed with the statement 'My students would learn more from reading than working on the computer'.

- The interactive whiteboard is recognised as a major innovation, with many lecturers commenting positively on the impact of the whiteboard on their classes. As a consequence there is growing dependence on IWBs, and several tutors commented on the difference it makes to their teaching, to the ambience of the classroom and to the motivation of the learners. Yes!
- Laptop trolleys which can be used in the classroom are popular with lecturers and students, as they make access much easier and avoid problems with accessing computers in central spaces such as libraries and learning centres. Laptops need careful management to match the class requirements with the capability of the laptops, however.
- Voting systems can enliven questioning sessions when used – but not overused – to test the right kind of knowledge. However, some tutors had reservations about the level of learning that was taking place

Electronic learning resources enabled greater personalisation of learning

- ICT Test Bed enabled colleges to acquire specialist software for curriculum areas. Some subject-specific software was sophisticated enough to enable tutors to create individual work plans for students. Buying one or two comprehensive but expensive packages (which ICT Test Bed has enabled) proved to be better than buying large numbers of more limited, cheaper packages.
- Staff became skilled in adapting and customising in-house and commercially developed materials to meet the needs of their learners. They made good use of internet resources to supplement learning materials and ensure that information was up to date. The sector has benefited from an ever increasing bank of resources, but it remained difficult and time consuming to search across many resource banks to find materials that matched the class' needs. A common solution was to rely on a restricted range of sources and often to develop their own materials. There was a trend towards the colleges making use of professional content developers to work with staff and help them improve the quality of the materials they were creating.

Leadership and management

Whole organisational change was a powerful strategy for accelerating improvement

Investment in ICT in a small number of curriculum areas in the colleges had far less impact than investment in schools across all departments. The major impact in the ICT Test Bed colleges has come from developments in MIS and learning platforms, which were installed for use across the whole college. The curriculum areas that

received ICT Test Bed funding have been able to transform their teaching methods and members of their staff have become models for innovative practice. However, they have necessarily become islands of innovation, which may be difficult to sustain.

It took time to embed change and develop e-maturity

The departments developed their e-maturity in a more or less linear fashion, with maturity growing rapidly in the first two years, and then slowing down between year 2 and year 3 and year 3 and year 4. This reflected the rate of change in schools. The levelling off of the rate of change was anticipated, because maintaining the momentum for change is less achievable as the integration of the systems becomes more complex. The plateauing of skills and integration of ICT is a reflection of the now steady increases in staff knowledge and expertise.

Technological and pedagogic sustainability needed to be planned for from the start

Revenue funding to give people time for new support roles, and regular meetings for planning and training, are important conditions for success in changing practices. Real sustainability means embedding ICT in pedagogic change. In the ICT Test Bed schools, installation of ICT equipment in all classrooms at the same time proved to be one of the best ways of getting staff to form a mutual support group and learn together. In the long term, this had a profound and positive effect on embedding pedagogic change. The colleges, in which technology was introduced into only three departments, did not experience this wholesale change in teaching and learning. However, we saw major effects from enhanced MIS systems and VLEs, perhaps because these had an impact across the whole institution. It is worth noting that in colleges, as in secondary schools, equipment which is permanently installed or which is common to all classrooms, such as display equipment, has been most effectively embedded. Equipment and software that is subject-specific is generally well used as well.

Procuring and implementing a large amount of ICT placed strain on all existing college systems

Procurement of the equipment in a short space of time placed heavy demands on the college finance team and caused tensions where spending limitations were in place. Installation of the new equipment had to be integrated into the existing college infrastructure and systems and phased in with other work and developments. This placed an additional load on the technical staff in all three colleges and led to further delays.

Change management should be regarded as the top priority

This is difficult with major ICT investment, which requires time-consuming procurement decisions to be made. Change management is concerned with changing structures and cultures. It is therefore a much deeper process than staff training, and one that has an impact upon working practices across institutions. It requires strong, visionary leadership and clear change management tools and procedures. The active support of a senior manager and supportive interest of the whole senior management team were needed to manage change effectively in the colleges. Colleges appointed project managers and established new committees to maximise staff participation, so that staff became partners in change. ICT tools that provided structures for (a) project management (b) collaborative working and (c) financial planning/tracking (spreadsheets) were powerful in managing change and tracking its progress.

Leadership strategies needed to fit the existing culture of the organisation and play to the strengths of all participants

The models of change management were quite different in each of the three colleges.. Two models are described here.

Franchise model:

“It’s like a series of franchises internally, that’s the way I think of it, you have got schools, departments… you have got lecturers and each one is given an element of freedom for what they want to deliver, but they have to use the supplied materials. In the well known franchises you are all similarly branded but in essence you are almost self-employed, and you have got a larger degree of autonomy.” ICT Test Bed Project Manager, College A

Empowerment model:

“Initially there were individual practitioners who were the obvious choice either because of the role they were playing or … [personal qualities]. But others have come through – the team has evolved a true sense of bottom-up implementation. At all levels it’s welling up from practitioners across the piece. For example, the joinery technician has taken it on himself to video things and produce demo materials for students. It’s been really empowering staff – it’s about having the faith in staff to truly empower them, not just empower them as long as they are doing what you want.” ICT Test Bed Project Manager, College B

MIS provided greater efficiency and effectiveness for managers and teachers

All three colleges upgraded their existing MIS with ICT Test Bed funding. The upgraded MIS streamlined business processes across the colleges. It made providing course information, dealing with enquiries and enrolling students much quicker and easier. Managers made regular use of data to help them manage the curriculum and their staff and to monitor performance. MIS personnel report that the new systems work better and help them to be more efficient and effective. The biggest impact has been at curriculum management level. Managers were able to pull off tailor-made reports from the system without having to request them from the MIS section. In the words of one ICT Test Bed Project Manager, “What was previously specialist is now open to all staff across the college.”

Workforce development

Access to reliable technology and daily use led to rapid improvements in tutors’ skills

In the last year of the project, as in previous years, teaching and support staff’s competencies peaked for word processing, presentation software, and using email. Searching the internet also scored highly. Use of these applications mirrored staff knowledge.

Award-bearing training for support staff focused on applications software by the fourth year of the project, where as tutors were more likely to receive learning platform and MIS training. With regard to MIS training, there had been a steady increase in the level of training that teaching staff had received over the course of the project, (5 per cent 2003 to 23 per cent in 2006). Given that support staff have a significant administrative load, the fact that they have only a low level of MIS training is surprising.

Several factors contributed to the successful development of the staff's skills

- Offering CPD over time maximised the use of hardware and software resources. It enabled staff to develop the necessary skills at different stages of their personal development in ICT. This helped them to introduce new methods and techniques in their teaching, rather than merely relying upon methods with which they were already familiar.
- Training needed to be co-ordinated with the introduction of the equipment.
- The most effective training was often informal, through team work and mutual support.
- Personal laptops were a major factor in helping college staff acquire skills and confidence to make effective use of ICT. Nearly all staff in ICT Test Bed areas had laptops for their personal use although some staff were

having problems with reliability, with outdated network cards and with running new software applications.

- Collaboration with other staff developed tutors' skills. The increased openness of the planning process brought about by using the VLEs as the main repository for learning, meant that tutors needed to collaborate with colleagues and share practice to a greater extent than previously. FE tutors were positive about this change and gained in many ways from the increased collaboration. This led to enhanced learning experiences for their students through staff skills and a wider range of learning resources.

Staff believe that ICT has reduced their workloads

- In 2006, 81% of teaching staff in colleges believed that the use of ICT would benefit them in terms of reducing their workload, up from 50% in 2003. Support staff were also largely positive about ICT: technology is seen to have a positive influence on both their workloads (86%) and their concentration (100%) but fewer were certain about productivity gains (63%).
- Improved MIS information made managing students on courses more effective and efficient. Tutors were also much more aware of student needs and the progress they were making. All of these factors were tangible benefits to the students and to the operation and efficiency of the college.
- Many staff believe that saving lesson plans and resources centrally to be shared, adapted and reused, will save them planning and preparation time in future years.

Cross-sector collaboration

Effective cross-sectoral collaboration required a common purpose and leadership from the top

Plenty of time for staff to meet and establish trust needed to be built into the process, with roles and responsibilities clearly identified. Links between the FE colleges and other institutions in the project were established with differing degrees of success according to individual drivers and visions. However, as schools and FE colleges are under different governance, without funding from similar initiatives it is unlikely that such links will continue.

Home and community links

Learning platforms extended students' learning into the home

Students still use the learning platform from college more frequently than from home. However, increasing numbers of students were found to be using the learning platform to access learning resources from home, and it was well integrated into the course structure/materials. Some tutors have created assessments for the students to do on the learning platform. Students said they liked having assessments available this way, as they helped them to revise by instantly giving them an idea of their weak and strong areas of knowledge.

The ability to access materials from outside college has helped students who could not always get into college, because of illness or employment. Students appreciated being able to access their course materials online. They now have the opportunity to take more responsibility for their own learning and even to take control of the learning, when the tutor facilitates and permits this. Some students used the learning platform from home to 'fast-track' through the course. Meanwhile, others were submitting work electronically and there has been some development of e-portfolios.

Students did not have home access to the full range of ICT functionalities

Most students had access to ICT at home. Libraries may be filling an important need for the minority of students who did not (there was a positive correlation between students who had no access to ICT at home with use of ICT in libraries). However, access to hardware did not equate to access to the level of functionalities that students experienced at college.

The majority of students reported not being able to use college software at home (68%); not having hardware provision for use in the home (90%); not being able to access their college emails from home (63%); and not being able to access the college network from home to download work completed at college (77%). One positive is that 67% of students could access the college website from home in 2006, an improvement on the 51% from 2003.

ICT made linking with employers more efficient

There have been considerable savings of time and money through using email to communicate with employers and set up work placements.

The wider community benefited from the ICT in the colleges

Community learning courses that targeted skills that had broad appeal, such as operating digital cameras, and were informal, flexible, short and involved small groups were successful. Many students progressed onto accredited courses once

they had gained confidence in informal ones. It is important to note that parents returning to formal education is likely to be of benefit to their children.