

## **Harnessing Technology - New Modes of Technology- enhanced Learning: A case study series**

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## Introduction: the case studies

The programme of case studies is designed to illustrate innovative, effective, practical approaches to technology-enhanced learning and to present a balanced appraisal of the impact they achieved and the challenges they faced. The case studies cover most sectors of education and a variety of settings, cohorts, aspirations, educational philosophies and technologies.

The practices described are not necessarily unique – although some may be. Neither are they futuristic nor employing leading-edge technologies. However, our research supports the view that, as yet, they are far from commonplace. As such, they exemplify innovative practice. We believe this practice is clearly transferable to many diverse settings.

Across the portfolio of case studies, the five Harnessing Technology system outcomes are evident. These are:

- Technology confident effective providers
- Confident system leadership and innovation
- Enabling infrastructure and processes
- Engaged and empowered learners
- Improved personalised learning experiences.

However, the last two of these permeate every case study. The practitioners and leaders involved in the case studies have the learners' experiences as the rationale for their innovations. They do not start with the technology. As we note in *New Modes of Technology-enhanced Learning: Opportunities and challenges* (Sharples *et al.* 2009), '... it is the educational practice itself that matters. Technologies offer choices as to how a particular practice is managed and supported.'

The case studies can be read individually or as a group. Readers wishing to locate these within the broader curriculum and pedagogy strand of the wider research programme are advised to take particular note of the sections 'New modes of learning' and 'Conclusion' of *New Modes of Technology-enhanced Learning*. Here we discuss ways in which we might analyse new modes of learning, and the apparent fundamental task facing Becta and its partners '... to develop strategies that can turn new modes of learning into operational reality, moving beyond the situation where innovation around learning occurs in isolated pockets. The challenge is to identify how such new modes can be spread beneficially across the education system and embedded as permanent features of learning and teaching.'

In Table 1 below, the sectors and keywords are:

- **Sector(s):** Early Years/Foundation, primary, secondary, 14–19, FE/post-16, ACL, HE, all sectors.
- **Target:** Transition, SEN/LDD inclusion, re-engagement/inclusion, family learning, enablers, CPD, postgraduates, work-based learners, Gifted and Talented.
- **Curriculum/subject:** Literacy, numeracy, cross-curricular, e-safety/media literacies, ICT, independent living, EAL, data handling, vocational/work-related.
- **Tools:** learning platform, mobile, SMS/texting, social network/forum, video conferencing, digital video, digital audio, data sharing, personally owned devices.
- **Free text:** Home access, personalisation, collaboration, parental engagement, e-assessment, distance learning, visual impairment, city learning centre, NEET, ASD, student voice, Diplomas, co-creation, reconfigured learning spaces, multi-agency, informal learning.

Note: The keywords for ‘Sectors’ and ‘Curriculum/subjects’ tagged above refer to the sector and curriculum/subjects in which the case study already operates. Most, if not all, of the case studies are transferable to other sectors and subjects.

**Table 1: Case studies**

<b>Case study</b>	<b>Lead organisation</b>	<b>Sector(s)</b>	<b>Keywords</b>
<b>Booxpace</b>	Mount Carmel RC Technology College for Girls	Secondary	Literacy, VLE, social network/forum
<b>Cube</b>	Sheffield South City Learning Centre	14–19	Gifted and Talented, literacy, media literacies, vocational/work-related, Diplomas, city learning centre
<b>Digital Learning Community</b>	East Riding of Yorkshire Council	Primary	Enablers, CPD, SEN/LDD inclusion, Gifted and Talented, cross-curricular, distance learning
<b>E-assessment</b>	Shell Centre, University of Nottingham	Secondary	Numeracy, e-assessment
<b>Eat-a-Metre</b>	i-City Learning Centre, Bristol	Mainly primary (Early Years to Key Stage 4)	Re-engagement/inclusion, cross-curricular, data handling, parental engagement, city learning centre
<b>E-Learn4Life</b>	Doncaster North City Learning Centre	ACL	Family learning, re-engagement/inclusion, home access, multi-agency
<b>Enhancing library catalogues</b>	University of Huddersfield library	HE	Data sharing, personalisation, student voice
<b>Glossy project on mobile learning</b>	Gloucester College	FE	Mobile, VLE, digital video/audio, personally owned devices

Case study	Lead organisation	Sector(s)	Keywords
<b>InLiving</b>	Kirklees Neighbourhood Housing	14–19	SEN/LDD inclusion, mobile, co-creation, independent living, multi-agency, informal learning
<b>Laureate</b>	University of Liverpool	HE	Postgraduates, work-based learners, learning platform, distance learning
<b>PlymKids e-safety project</b>	South West Grid for Learning	Primary, secondary	E-safety/media literacies, digital video/audio
<b>Rug Room</b>	City College Norwich	FE	SEN/LDD inclusion, social network/forum, e-safety/media literacies, co-creation, reconfigured learning spaces, ASD
<b>Silver Surfers</b>	Ealing City Learning Centre	ACL	Re-engagement/inclusion, SEN/LDD inclusion, EAL, ICT, city learning centre
<b>Text messaging in undergraduate lectures</b>	University of Nottingham	HE	Mobile, SMS/texting, personalisation, data sharing, student voice
<b>Talking Tactile Technology</b>	The Royal National College for the Blind	FE, all sectors	SEN/LDD inclusion, cross-curricular, visual impairment
<b>Video conferencing</b>	Finham Park School	Primary, Secondary	Transition, video conferencing, mathematics
<b>Whole-school creative digital media</b>	St Helen's Catholic Primary School	Primary	Enablers, CPD, digital video/audio, literacy, cross-curricular, city learning centre
<b>Wigan Online</b>	Wigan Council	14–16	Re-engagement/inclusion, learning platform, NEET, home access, personalisation

ASD, autistic spectrum disorder; CPD, continuing professional development; EAL, English as an additional language; LDD, learning difficulties and disabilities; NEET, not in employment, education or training; SEN, special educational needs.

## **Boospace – Mount Carmel RC Technology College for Girls**

Harnessing Technology system outcomes:

- Technology confident effective providers
- Engaged and empowered learners.

Boospace is a virtual book club, created using a virtual learning environment (VLE), and used in the context of a secondary school for girls aged 11–16.

### **Innovation**

Stephanie Tuey, Learning Resources Centre (LRC) Manager at Mount Carmel RC Technology College for Girls, created a virtual book club using the Fronter VLE.

### **Background**

The college launched Boospace in April 2008 as part of the LRC's National Year of Reading campaign. Boospace was created for all students and teachers in the school. From Year 7, all students become club members with access to the resources. The main function of Boospace is to encourage pupils to read and enter into discussion with peers and teachers.

Boospace aims to reach LRC non-users, foster a love of reading and improve literacy and critical skills. Boospace aims to reach both students who don't read and those who read well: the idea behind the project was to sustain and develop the interest of more able readers, whose enthusiasm would draw other, less able, pupils into reading, and so broaden the reach of all readers.

The virtual book club also provides a 'space' for reading and discussion. Although there are areas for students to meet in the LRC, a quiet group in the space was considered a luxury.

Boospace is managed by Stephanie Tuey, the LRC Manager, and used on a daily basis throughout term time and holidays.

### **Technology**

Boospace was created with Fronter, a VLE introduced into most Islington secondary schools.

The technology is used as a communication tool, with a page for news and messages, and a discussion forum. The example below, from the forum, shows how debates, some of them contentious, are instigated:

“Pupils had recommended a particular book to be stocked by the LRC (the novel *Ugly*). Its suitability was debated between teachers and pupils: pupils were keen, some teachers were not. The ensuing discussion ran over many postings, which drew interest from a range of pupils throughout the school.”

[Ms Tuey]

## Teaching and learning

The technology enables pupils who might never come to a library in person to participate in individual and group learning. Stephanie Tuey cited one student whom she had never met and who didn't come into the library, who registered on Boospace. The student was interested and contributed online.

The interactive nature of the technology helps pupils develop a sense of audience and know how to adopt an appropriate response style and become more critical readers and writers. Students have the opportunity to discover texts which they might not have considered reading. For example, Stephanie Tuey had set up a scheme to introduce pupils to the classics. As an incentive, she offered £10 book tokens to pupils who had verifiably read six classics. An online classics discussion forum has since evolved.

Ms Tuey emphasises the reliability and consistency of the VLE – the fact that it is always there. A physical book club has drawbacks – there are comings and goings, people forget things – but the VLE is visibly present 24-7. Pupils can communicate with each other, with their teachers and with the LRC manager from home, on holiday and over the summer.

## Impact

The initial impact was significant – enthusiasm generated more feedback – but over time, there has been some inevitable audience loss.

Keeping the momentum going with teachers is important. The LRC manager supports other reading initiatives by suggesting use of Boospace to advertise and disseminate information and to provide an online discussion forum. Boospace competitions, links to national competitions, the display of students' artwork and photographs, and prizes help to maintain interest and momentum.

Ms Tuey thinks that Boospace might encourage more students at the school to keep reading and moving on to more challenging books if other schools could be invited to join:

“What is unique to Boospace is that the technology enables pupils with poor literacy skills to engage in discussion in an environment where they feel included. They might not have got very far with a book but the forum encourages them to feel part of

a reading community and to feel that their contribution online, even if limited, is of value. It is OK to read.”

## Challenges

There can be a gender divide. Ms Tuey would like to encourage students to engage more with non-fiction texts: “Girls can have non-fiction reading deficits.” The challenge with boys is different. Negative assumptions can be made about boys, but in fact many boys are good readers, whose ability to be precise and to synthesise non-narrative texts is overlooked. Boys and girls should be given more non-narrative book lists.

Boys and girls use technologies differently, so there may be a case for looking at how boys use a VLE book club. A comparison could be made between a group of boys using a Fronter book club (such as Boospace) and those using an unsupported group, to see how their levels of reading could be maintained. Could the VLE make a motivational or some other quantifiable or qualitative difference? Ms Tuey believes it would be possible to set up a project using the Fronter VLE with secondary schools:

“...to select a trial group with boys using a VLE forum to share experiences about books and reading, to see how their reading developed and who kept up. This would be an interesting thing to do.”

However, Ms Tuey also cautions:

“The VLE is just a tool, not a magic bullet.”

There was also initial concern that a VLE, once set up, must be supported and not be vulnerable to data going missing, or to arbitrary changes in infrastructure or to decisions made by service providers and clients such as local authorities.

## Wider adoption

Libraries are not classrooms: they have additional roles besides those that are curriculum-related, including for reflection and relaxation. Boospace has the potential to develop virtual communities of reading, with small groups springing up around themes or authors. Seeding partnerships with other schools could be beneficial, if selectively managed. It would be good to open up an author programme, so that authors could be invited into dialogue with the LRC manager.

The Fronter technology could be made to feel less ‘clunky’ and brought up to date with other competing technologies. This, however, applies to all activities which use Fronter, and not just to its wider adoption in relation to the virtual book club.

## **Cube – Sheffield South City Learning Centre**

Harnessing Technology system outcomes:

- Improved personalised learning experiences
- Engaged and empowered learners.

<http://www.cubeweb.org.uk>

The Cube project provides journalistic and media work experience for Year 10 and 11 students in Sheffield.

### **Innovation**

The Cube project exemplifies how work placements for secondary school students can be redefined. The project creates a work environment exclusively for placement students, who produce an edition of an established magazine.

By creating a workplace environment, Cube avoids some potential constraints of school-based learning, such as school timetabling, traditional roles assumed by students and adults, and qualification-driven learning.

The young people's roles and responsibilities are greater than are normal in a traditional placement. Further, Cube exemplifies the personalisation of learning, with all young people active in negotiating the nature and direction of their work while on placement.

### **Background**

The Cube project was set up in 2003 by Sheffield South City Learning Centre (SSCLC) to give young people access to authentic journalistic and media work experience. Cube is overseen by John Birks, the SSCLC manager, and co-ordinated by Vicky Morris, an educational media specialist who uses industry partnerships to engage a range of media professionals.

Each placement runs for two weeks. Approximately 10 young people from a mix of schools participate at any one time.

Cube's placements have an emphasis on journalistic writing for the magazine. Students have the additional opportunity to produce material for Cube Radio, Cubeweb and Cube exhibitions, and thus develop skills in interviewing, graphic design, photo journalism and digital imaging. In 2007–08, Cube received additional funding from Mediabox, allowing separate design and film placements to be piloted and explored in more detail. Cubeweb also provides a platform for Cube readers to publish their work through events such as writing competitions.

## Technology

Technology is central to the innovation, allowing realisation of the focused and tangible target of producing an edition of an established magazine.

Cube is based at a city learning centre which provides 12 computers with internet access. Students use digital still and video cameras and MP3 recorders to create and acquire media. Material is produced and edited using Word, Audacity and Adobe Photoshop. The recent design placement students also use a range of applications from Adobe Creative Suite, including Adobe Premier.

“I feel more confident on computers and laptops and using software to edit interviews and image.”

[Cube reporter]

During the placement, the young people rely heavily on technology. In addition to specific software skills, students develop their internet research and general digital information management skills, and their computer confidence.

## Teaching and learning

Cube promotes a supportive workplace environment. Learning is driven by the target of producing high quality material for a tangible audience, within a deadline. The young people are encouraged to pursue personal interests and set their own agendas, guided by the project co-ordinator.

“There isn’t one way of working; it’s a case of you look at who you’ve got, how they like to learn, what they’re interested in and what will keep them motivated for two weeks. Then you keep making sure their individual plates are still spinning.”

[Vicky Morris, Project Co-ordinator]

The placement is not tied to a formal educational assessment; instead, the young people receive a detailed work reference. The fact that they will receive a reference helps motivate and inform the choices that the young people make regarding their work.

## Impact

Cube Magazine is highly regarded among young people across Sheffield and the South Yorkshire area.

Since Cube started, approximately 700 young people have undertaken Cube placements or been involved in related projects. A further 500 or so have participated via Cubeweb.

Students are able to develop a broad range of skills, including specific journalism and communication skills, computer and technological skills, leadership and team

skills, and employment-related competencies. The value of Cube is underpinned by the personal development of the young people, particularly in terms of their confidence and self-esteem.

“It just gives other people another side to you and it shows – yeah, I can do this!”  
[Cube reporter]

“Even people who haven’t got particularly high aspirations, it will help give them confidence and help them succeed. It helps define what you want to do.”  
[Cube reporter]

Cube has received extensive positive feedback and has inspired several organisations to start their own magazines with young people, including Grounded in Rotherham (2006), which also runs from a city learning centre, and Lyrical (2008) produced by a group of Sheffield care leavers.

## **Challenges**

Cube’s internet access was originally subject to the local authority’s filtering policy. The policy proved restrictive, particularly as access to sites such as MySpace and YouTube, both essential for research, was denied.

Cube is unable to run from autumn 2008 due to a lack of finance. Placements cost approximately £1,000 per student in their present form. In previous years, Cube has been partly funded by SSCLC core funding with the help of external sources such as Objective One funding through the South Yorkshire e-Learning programme, and the schools-related initiatives Aim Higher and Gifted and Talented.

## **Wider adoption**

Vicky Morris stresses the invaluable support provided by John Birks, SSCLC and Sheffield schools in running Cube. Ms Morris emphasises that if similar projects are set up, they need to have a clear structure and, ideally, support from projects such as Cube. Further, it is important that schools and the relevant staff within them are given the information so that they can fully appreciate this different style of work placement.

Ms Morris believes that the vision of a dedicated media work placement, not restricted by the demands of a qualification but guided instead by the young people themselves, is central to Cube’s success, and that this would need to be maintained if the innovation were adopted elsewhere.

## Digital Learning Community – East Riding of Yorkshire Council

Harnessing Technology system outcomes:

- Enabling infrastructure and processes
- Confident system leadership and innovation.

<http://www.thedlc.org/index.shtml>

East Riding Digital Learning Community is part of the East Riding local authority and provides online teaching and ICT support for primary education within the authority and beyond.

### Innovation

The East Riding Digital Learning Community runs a direct teaching service that allows geographically dispersed primary learners to work together in live online lessons, with additional post-lesson activities provided via a virtual learning environment (VLE).

### Background

The East Riding of Yorkshire is a mainly rural area in which approximately one-third of the primary schools have fewer than a hundred pupils; consequently some pupils have few peers working at their level within their schools. John Janulewski, East Riding's ICT Strategy Manager, developed the Digital Learning Community's direct teaching service to enable children in rural areas to have access to lessons specifically designed and paced for their needs, alongside peers and with a high level of teacher input.

Mr Janulewski set up the Digital Learning Community in 2004 using funding from the Office of the Deputy Prime Minister, matched by East Riding Council.

The original purpose of the Digital Learning Community was to provide lessons for children who are either disengaged or at risk of becoming disengaged from mainstream provision. Since then, the direct teaching service has expanded to include primary numeracy and literacy booster courses, lessons for gifted and talented pupils, out-of-school-hours courses for looked-after children, and continuing professional development (CPD) for staff.

### Technology

The Digital Learning Community's direct teaching service uses web-conferencing technologies to deliver lessons. To participate, schools need computers running at least Windows XP, with internet access and an audio headset for each child. The technology allows the participants to speak to and communicate by text with each

other, share screens and make contributions to the whiteboard. Webcams can be used to provide a visual link, but tend not to be used because they have been found to be distracting for primary-aged children.

The Digital Learning Community hosts a dedicated VLE that is populated with extension and consolidation materials and activities, and is available to subscribing schools.

During the 2007–08 academic year, 923 children from 64 schools took part in Digital Learning Community live lessons.

## Teaching and learning

Most courses run for 6-14 weeks and consist of a weekly 45 minute lesson for groups of six to eight learners. Each lesson focuses on particular aspects of literacy or numeracy, with an emphasis on the children's active participation in and collaboration during the session. In addition, every child has some individual time with the teacher during every lesson.

"I like the idea of getting different people from different schools and talking to each other and using each other's ideas to figure out puzzles. It was easier for me than normal to get on with it, because of the encouragement. I like the text chat box and enjoy it when other pupils are saying 'Well done' or 'Nice one'."

[Digital Learning Community pupil]

The pupils can choose whether to contribute openly to the group or privately to the teacher. The Digital Learning Community believes this to be critical, as some of the children have low self-esteem and find it intimidating to communicate in public.

"There are a number of children out there who are able to do more than they tend to do in a school setting, and this is one area that every child gets an opportunity to express themselves in a way that's either private or public. We want children to communicate, and if we can provide just one little step where a child has communicated and got pleasure from communicating, then that supports the work they do in other areas of the curriculum."

[Mr Janulewski]

Disruptions to lessons are minimised if a teaching assistant supervises the children and deals with any issues that the children encounter as they arise.

All lessons are taught from a central building; this ensures the smooth running of the lessons, as the Digital Learning Community is able to respond rapidly to any technical problems.

Each lesson is evaluated and feedback is given to the schools.

## Impact

An independent report praises the quality of the teaching. In addition, a study from Hull University indicates a greater increase in motivation and confidence for children taking part in the Digital Learning Community lessons compared with matched groups at the same school; this mirrors observations from schools:

“The novelty of the way the Digital Learning Community lessons are delivered, ie internet with headsets, seemed to increase the children’s enthusiasm for numeracy.”  
[Headteacher at a participating school]

“Thank you; yet again a brilliant course that inspires and excites the children.”  
[Headteacher at a participating school]

Schools often place the children who are at risk of not reaching their targets in the booster lessons; the majority of these children then successfully meet their targets. It is thought that this is due to the schools integrating the Digital Learning Community lessons with their usual classroom activities.

The Digital Learning Community has also received praise for its CPD courses. Staff who participate in CPD through the direct teaching service save travelling time and costs, which is particularly important, as East Riding is a large rural area.

## Challenges

Primary schools tend to have flexible timetables to accommodate visitors, trips away from school, sports days, and so on, therefore for a Digital Learning Community course to run effectively, careful planning is needed to ensure that all participating schools are able to co-ordinate their timetables and school diaries.

Further, good time-keeping is crucial to the success of each lesson, as is the upkeep of the school’s technology.

The Digital Learning Community is part of the East Riding local authority structure. Originally, the Digital Learning Community was funded by fees charged to schools, with a subsidy of around 50 per cent from grant funding. Although grant funding has now ceased, East Riding Council has compensated by paying the local authority revenue element, as recommended by Becta. The Digital Learning Community is currently investigating other ways to ensure its financial sustainability.

## Wider adoption

The reputation of the direct teaching service has led to the Digital Learning Community delivering courses nationally, and with different group of learners, such as school bus monitors and children at home through illness. However, Mr Janulewski believes that the most effective use of the Digital Learning Community’s

direct teaching service is as a strategic part of the local authority's Children and Young People plan, with co-ordinated aims and targets.

## **E-assessment – Shell Centre, University of Nottingham**

Harnessing Technology system outcomes:

- Improved personalised learning experiences
- Technology confident effective providers.

<http://www.mathshell.com>

The Shell Centre for Mathematical Education at the University of Nottingham has developed assessment materials for the UK and USA for over three decades.

### **Innovation**

The e-assessment tests developed by the Shell Centre for secondary mathematics go against the trend of factual, disconnected learning that can easily be tested to provide summative results on demand. Instead, the tests developed by the Shell Centre translate and extend questions found on typical paper-based examinations into richer computer-based tasks.

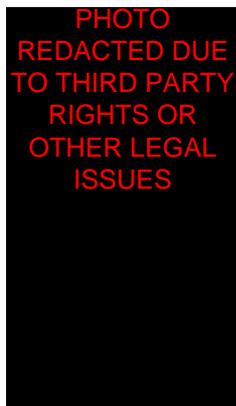
### **Background**

The Shell Centre develops tasks by using an iterative design-based methodology that involves close collaboration between designers, teachers and examiners. Tasks are trialed with large groups of pupils in various schools and reviewed by experienced GCSE examiners using a specially designed interface. The findings from the trials inform the designers about the viability and scope of the software, and also the practical realities of schools delivering e-assessment using their existing infrastructures and expertise. Findings from trials and control groups, along with feedback from pupils, teachers and examiners, informs further development.

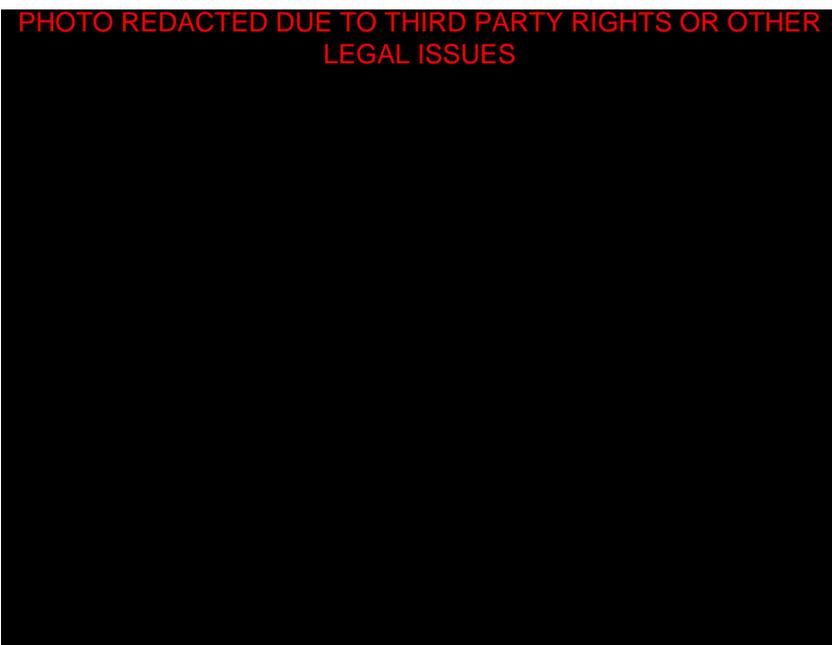
### **Technology**

The computer-based tasks are for use by pupils in examination conditions. The software combines the advantages of the precision offered by computers, such as virtual measuring instruments and graph-making tools, with the freedom offered by paper, in the form of devices that support and capture pupils' working (marks are awarded for pupils showing their workings in mathematics assessments).

The printing calculator tool is an example of the technology:

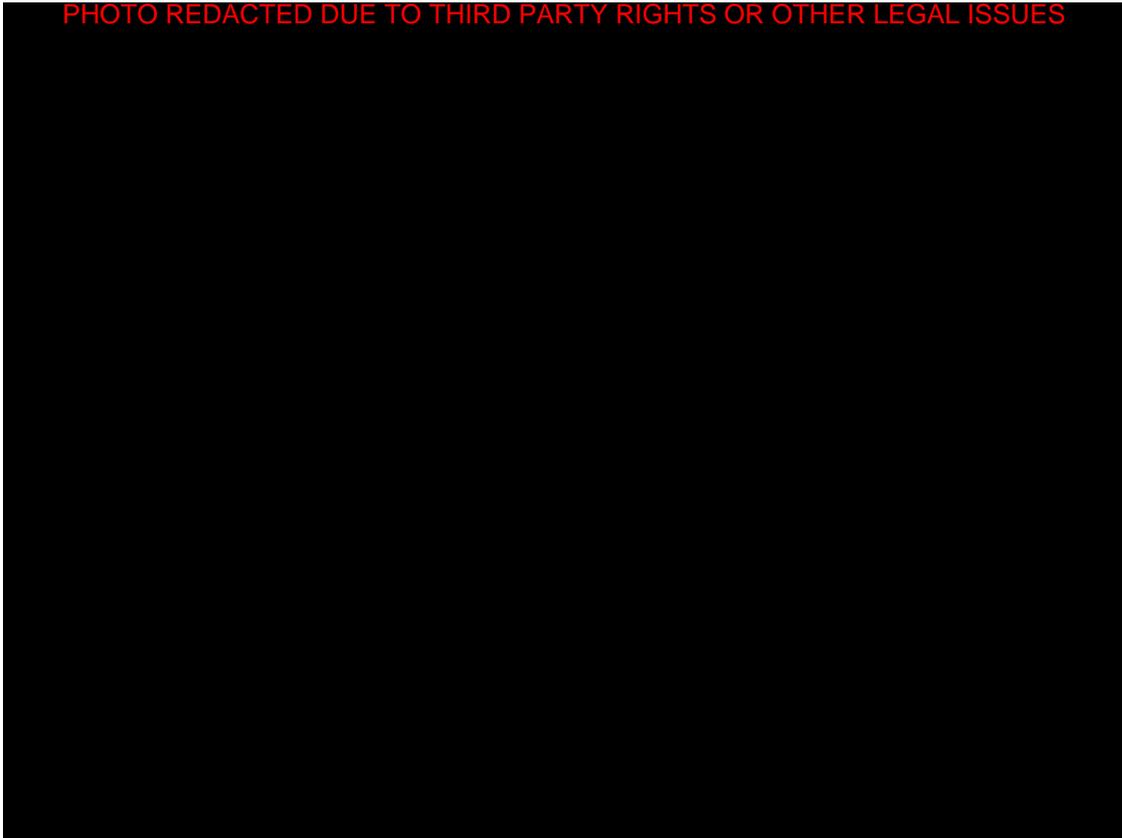


The printing calculator addresses two key issues of mathematics assessment: capturing workings-out, and allowing the entry of mathematical notation such as fractions and special symbols. The calculator can be embedded in structured problems, and pupils can tear off and attach printouts to their work.



Printing calculators can also be combined with other mathematical tools to provide interactive questions about graphs, algebra, geometry and other domains; however, the use of technology is not always clear cut. For example, using a computer drawing tool for a line of best fit is more difficult than using a ruler, whereas a computer can produce a least-squares fit instantly. The rich mathematics lies not in the mechanical skill but in the choice of technique and the ability to correctly interpret the result.

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The software offers automated marking for many questions, but for the trials, pupils' work was marked by experienced examiners as a reference point. The examiners used an interface that can generate a variety of graphical and statistical views of results. Reports suitable for pupils and teachers can also be developed in the future.

The software is browser-based and programmed in Macromedia Flash; no special installation is needed. The hardware used in the trials is the type found in the schools. Large numbers of pupils worked with a computer simultaneously, which presents challenges to typical schools (see below).

### **Teaching and learning**

Summative assessment has a dramatic impact in classrooms. In many subjects, the assessment regime atomises knowledge into short closed questions for ease of processing. This imposes a transmission model of pedagogy on teachers, who are under immense pressure to deliver summative results. Current trends in e-assessment may entrench this regime further.

If e-assessment is to have a real and sustainable impact on learning and teaching, it should seek to use the power and flexibility of computers to transform assessment. Further, computers can produce high-quality feedback for learners and practitioners. With current technology, the role of experienced examiners is central to transforming the assessment regime. Automation cannot currently replace human expertise in the

testing process, but it can give professionals more powerful tools for assessing conceptual understanding.

## Impact

Schools are not in a position to innovate GCSE assessment, because of the existing examination regime and the kinds of challenges set out below. The trials therefore took the form of a simulation rather than an implementation. It was therefore not feasible to test for real how computers can challenge the trend that e-assessment too easily leads to entrenching the existing assessment regime even more firmly.

## Challenges

Four key factors challenge the use of technology to transform the assessment regime:

- Many pupils do not see computers as a natural medium for doing mathematics, and perceive using calculators as somehow cheating. This makes the application of computers in mathematics exams somewhat contrived.
- The technology infrastructure technology infrastructure in schools is inadequate.
- The evidence base is limited.
- One trend in e-assessment is towards short closed questions that can be easily processed for summative results on demand.

## Wider adoption

Three of the challenges identified above need to be addressed to facilitate wider adoption:

- The technology infrastructure found in typical schools must improve so that it can routinely and reliably support large numbers of pupils working online simultaneously. Each student needs a computer with a high bandwidth internet connection.
- An evidence base of demonstrable and tested e-assessment designs must be provided to convince practitioners, policy makers and examination boards of the worthiness and robustness of e-assessment. This will require researchers to work closely with practitioners, and for empirical work at all stages from the design of the tests to large-scale trialling.
- The assumption that technology can or should replace human agency when processing assessment data needs to be challenged. Instead, multimedia technologies should be harnessed for their power to move the assessment regime towards richer, deeper measures of understanding.

## **Eat-a-Metre – i-City Learning Centre, Bristol**

Harnessing Technology system outcomes:

- Engaged and empowered learners
- Improved personalised learning experiences.

Eat-a-Metre is an ICT-based cross curricular project for schools, centred on growing a square metre of vegetables. The project is run by Bristol's i-City Learning Centre.

### **Innovation**

Eat-a-Metre uses the tangible, hands-on activity of growing vegetables to help children understand and experience various technologies in a practical situation. Throughout the project, children use technology to collect, record and produce useful and/or interesting information regarding their vegetable plots. Thus Eat-a-Metre embeds the use of technologies to develop children's ICT skills as required by the primary ICT capability curriculum. Although the central emphasis is on developing ICT skills, the project has potential for rich learning across the curriculum, with particularly strong links to science, numeracy and literacy.

### **Background**

In 2006, Lyn Roberts and Simon Squire from Bristol's i-City Learning Centre created the Eat-a-Metre project to address Bristol's city-wide priorities of promoting data handling and the national Healthy Schools agenda.

The city learning centre provides interested schools with comprehensive training and the resources needed to set up the project, such as lesson ideas, seeds and plug plants, equipment (on loan), access to a city-wide database, and support from the city learning centre.

In addition, the Eat-a-Metre team works closely with the Primary Strategy team to ensure that schools are aware of the strong National Curriculum links and have the opportunity to incorporate the benefits of the project as part of their school development plans.

In 2008–09, 46 Bristol schools ran Eat-a-Metre, covering nurseries, primary, secondary and special schools. In addition, Eat-a-Metre was used at a pupil behavioural unit and a teenage pregnancy unit.

### **Technology**

Fundamental to the project is the use of data loggers, digital cameras, digital microscopes and computers to create online diaries and allow access to the central web-based database. Beyond this, each school makes more extensive use of

particular technologies, according to the differing cross-curricular aspects being taught.

The city learning centre's equipment-loan scheme ensures there are sufficient handheld devices available for whole-class use. The devices were carefully selected to be accessible to nearly all learners, including those with disabilities, and younger children – thus they are robust and simple to manipulate. Similarly, the database is designed to be both practical and appealing for children of a range of abilities to independently enter and access data.

Children can access both individual and cumulative data entered by participating schools and so, for instance, can compare data for schools in different locations and find averages across the city.

### **Teaching and learning**

The whole Eat-a-Metre programme has been designed to explicitly map onto the National Curriculum ICT programmes of study. Although the development of ICT skills is central to the project, the aim is for the technology to be used as a vehicle to allow learning that captures the children's interest and shows explicit links between how the information recorded can inform a tangible activity, in this case growing vegetables.

“ICT capability needs to be at the forefront of our thinking. True capability is developed when children have a clear understanding of the strengths and weaknesses of the ICT and how it can assist them in their learning and communication within a range of contexts.”

[Extract from Eat-a-Metre website]

Schools have also used Eat-a-Metre in a variety of ways, beyond its stated ICT and science aims. For example, Avon Primary School and Hillcrest Primary School have formed international partnerships with schools in Uganda that replicated the project using paper copies of the digital materials. Hillcrest has linked Eat-a-Metre to an innovative curricular-rich enterprise project where the children, among other things, market the produce to parents to raise funds for additional equipment. The produce is also used in the school kitchen.

“Every child in school is involved in the project: every class in school has a school garden where vegetables are grown which are used by the school meals service as part of their commitment to providing organic and locally produced food.”

[Norma Watson, Headteacher, Hillcrest Primary School]

## Impact

One major impact has been how the project has given teachers the understanding and confidence to use technologies that may previously have been unfamiliar to them.

“Teachers have seen that how we use technology is very accessible and very all encompassing, and that has allowed them to transfer that technology use from our project into other areas; it has therefore broken down barriers.”

[Lyn Roberts, i-City Learning Centre Manager]

Most participating schools have reported that the project has resulted in closer links between home and school. Crucially the project has captured the enthusiasm of a diverse range of children. One Year 3 child considered to be hard to engage simply commented, “I love gardening day.”

## Challenges

Some schools have had to overcome the physical limitation of their site having no ground obviously suitable for cultivation. These schools have built raised beds in the playground or planted in large freestanding containers.

The city learning centre found it imperative to get schools to appreciate the fundamental role of the initial staff training, so that staff were aware of the potential of the project, both in use of technology and wider learning, and gained confidence in using the equipment. It has also been found that the most effective way for the project to run is as a whole-school project, where all teachers, teaching assistants and volunteers, as well as the children, capture the aim and vision of the project.

## Wider adoption

The project has national transferability, and has had interest from other authorities looking to implement Eat-a-Metre. Although keen to promote its use, currently Bristol does not have sufficient resources to offer support for its adoption elsewhere.

There may be difficulties in some areas in providing the project resources, particularly rural areas with no city learning centres, but the programme can be run with a relatively inexpensive toolkit already common to many primary and secondary schools. The city learning centre has funded its side of the project entirely from its internal budget, and many of the Bristol schools used Healthy Schools funding to invest in Eat-a-Metre.

## **E-Learn4Life – Doncaster North City Learning Centre**

Harnessing Technology system outcomes:

- Improved personalised learning experiences
- Engaged and empowered learners.

<http://www.doncasternorthclc.net/page--E-learn4Life.html>

E-Learn4Life connected local agencies with people at risk of social and educational exclusion, and provided home e-learning for the young people and their families. The project gave targeted families a laptop, educational software, individual learning plans and regular support.

### **Innovation**

E-Learn4Life exemplifies multi-agency working to support and deliver basic skills through e-learning. The project identified whole family units that had been disadvantaged in terms of accessing more traditional forms of education. The agencies supported participants during the programme.

The approach acknowledges the complexity of the relationship between educational and social factors, and utilises the specialist expertise of diverse social agencies.

### **Background**

E-Learn4Life ran in 2007–08 in Doncaster, South Yorkshire, and was devised and managed by Ian Archer, a special needs co-ordinator and head of a learning support unit, with assistance from Anjam Aslam, Doncaster Metropolitan Borough Council's Funding Director.

A diverse range of agencies participated in the project. To ensure that the project benefited those it intended to reach, Mr Archer contacted all the local agencies in his area that work directly with groups of people facing social or educational disadvantage. Agencies that participated in the project included ethnic minority and traveller achievement services, young parents' support services, and the hospital education service.

The agencies identified families who were most likely to engage with and profit from E-Learn4Life. The family and agency then put in a joint application for E-Learn4Life. Once the application was accepted, the agency provided tutoring and support for the learners. Individual learning plans were agreed between each learner with the agency, supported by E-Learn4Life. Learning was closely monitored. When the agreed educational targets were reached, the family kept the laptop.

## Technology

All laptops were installed with a range of learning applications covering basic literacy and numeracy, life skills, keyboard skills, word processing and spreadsheet use. Much of the software was free, with £8,000 spent on licences for the literacy and numeracy applications. Learners were also offered a separate keyboard and mouse.

Learners negotiated with their agency workers which applications were most appropriate for them. Learners kept log books of their activities on memory sticks, and were regularly visited by the agency workers, who in turn were supported by Mr Archer.

## Teaching and learning

To comply with funding regulations, a young person was designated as the named learner in each family. The educational needs of the whole family were taken into account, however, and each family member was encouraged to have an individual learning plan. Typically the learners were expected to study for six hours a week for 12 weeks.

Mr Archer aimed to select appropriate software; in particular, he tried to ensure that the learners' levels of English would not be a barrier to their participation in the project.

The courses were not accredited, although some learners were funded to take the European Computer Driving Licence through Doncaster North City Learning Centre after their targets had been met. Mr Archer and the agencies involved were aware that the benefits from the e-learning programme far exceeded gaining academic qualifications. The programme fostered self-esteem, confidence and motivation, which are recognised as key factors in helping tackle educational disengagement.

“This isn't about giving a family a laptop; it's about saying you've got worth. It's about dignity and saying you're worth investing in.”

[Mr Archer, Project Co-ordinator]

## Impact

Over the 10 months of the programme, E-Learn4Life distributed 102 laptops and supported approximately 300 learners. Only one family did not reach their agreed targets. This level of success illustrates how well the families were targeted. One family logged over 70 hours of work in one week.

Learners and agencies gave extensive positive feedback, many focusing on the wider confidence issues. One agency reported:

“This initiative has enabled the participants to make tentative steps towards independent learning, and the effect it has had on their self-esteem has been substantial.”

[Agency report]

All participants commented on the educational value of the project in increasing academic skills.

For some learners, the access to a computer greatly assisted their physical needs:

“I like the laptop because it is easier to write than writing with my hands because it hurts my hand and takes up so much of my energy so I can’t be bothered and I can get really frustrated.”

[Eleven-year-old learner with additional medical needs]

## **Challenges**

Referrals through schools tended not to be as appropriate as referrals through agencies, possibly because schools are sometimes not as familiar with the needs of the whole family and may be unable to supervise as closely as other agencies can.

Due to lack of staff, E-Learn4Life was unable to provide a point of contact throughout all working hours. As such, agencies sometimes had to wait for messages to be delivered and dealt with. Mr Archer thinks that the project would have benefited if someone had been available to deal with queries more quickly.

Sourcing the laptops and software was particularly time-consuming. Mel Bryden, the manager of Doncaster North City Learning Centre, and his staff gave invaluable support in loading the applications and safety testing the laptops before distribution. The city learning centre also helped to provide ongoing technical support and storage space.

## **Wider adoption**

A key element of the project was getting agencies on board. This was helped by building on the many positive working relationships already established between Mr Archer and the agencies.

E-Learn4Life received Objective 1 funding through the South Yorkshire e-Learning Programme. Mr Archer commented that there can be a pressure to use such money to provide accredited courses and state-of-the art technology. Mr Archer warns, however, that the ethos of E-Learn4Life is primarily about promoting the self-worth which underlies engagement in education, and any accreditation would need to be incidental and not the focus of any future project.

## Enhancing library catalogues – University of Huddersfield library

Harnessing Technology system outcomes:

- Enabling infrastructure and processes.

The University of Huddersfield library has used new technologies to enhance the use of the library catalogue.

Material was gathered for this study from interview with Dave Pattern, Library Systems Manager, University of Huddersfield on March 20th 2009.

### Innovation

As elsewhere, the library catalogue at Huddersfield University is maintained by library staff and used by academics and students. The project described here exemplifies a trend towards using new technologies that explore and exploit the potential of existing resources in higher education institutions for the purpose of improving management information and usability.

### Background

Dave Pattern, Library Systems Manager, worked for a children's library-book supplier before becoming Systems Manager at the University of Huddersfield library, where he is now developing services. He has a business background.

The university needed a cataloguing system that was more accessible and responsive to users' needs than the existing stock inventory. Commercially available systems were considered but not thought sufficiently flexible for the university's requirements. Data, collected and stored by the library for over 13 years, was not being used to inform borrower requirements. The purpose of the project, which is at an early stage, is for borrower data and user profiles to become part of a more useful resource.

Library staff, academics and students of the university are currently involved.

The process was described as experimental. The system is evolving along a number of strands:

- An electronic stock control and management system
- An enhanced library catalogue for users
- A shared data source, which can be used to reveal overall trends in borrowing and look at individual patterns of use or borrower profiles. This third strand is intended to yield instantly available, up-to-date information that has useful and practical applications.

## Technology

The database contains around three million library transactions. Mr Pattern explained how the system can be used:

“A student borrows a book from their reading list, and the choice is automatically recorded and stored. From these transactions, a search on title can reveal trends, that is number of borrowings of any book in any one year, and ‘patterns’, that is which other books were taken out at the same time or transaction. This information is available at individual user level.”

Taking into account the number of borrowings, and what other books the student has borrowed – ‘borrowing clusters’ – the library system can suggest titles or other books the student may find useful. Mr Pattern observed that “Libraries don’t usually look at usage data to look at clustering.”

October is the peak month for book loans, with the most use of the recommendations occurring the following month – when stock is not available on the shelves, borrowers use recommendations to find other material. Library staff are alerted to which titles are likely to be most in demand – for example, around exam time – and individual students can receive personalised recommendations straight to their accounts.

The system can also detect when books on the reading lists are not being borrowed. This information can be useful for academics compiling or updating their lists.

The system has just started to track use of journals.

## Technology and learning

Enhanced information can be obtained through a star rating and comments section for staff and students, which has been running for around 18 months. Eliciting comments from students is intended to open up dialogue about study materials and encourage lines of communication. However, the rating system is more popular with students than the comments section. Some tutors are more active in encouraging student comments than others.

It is thought that the new online system may make it easier for academics to compile and submit their lists to the library, which would help with the provision of books. Library data could also be of benefit to prospective students in making their choice of course. It would also be useful for students to see which books and resources they would need to read for different subject areas.

## Impact

The information that libraries routinely collect is often an untapped resource. There is some evidence that analysing library data is not only useful for stock management, but may help to encourage new borrowing habits:

“Many libraries are seeing a decline in borrowing, but Huddersfield is bucking the trend.”

[Mr Pattern]

According to data from the Society of College, National and University Libraries, the combined number of issues and renewals went down in 2007–08, but issues went up. This suggested that students were renewing less often, but borrowing more widely. By looking at the Huddersfield data, it could be speculated that students are acting upon the recommendations and starting to expand their borrowing horizons.

## Challenges

Challenges fall broadly into three categories: institutional, pedagogical and technical.

University libraries tend to be interested in sharing data and resources. Some librarians have come to Huddersfield to see the new system; however, at institutional level, it is thought there may be resistance to sharing, because of competition and the issue that some universities want to protect their data, not share it.

Pedagogical challenges focus broadly upon knowledge sharing. For example, when tutors compile reading materials, there may be a tendency to rely on particular familiar academic publishers. The technology has the potential to enlarge the stock of knowledge by recommending associated titles and resources from other sources, which may include exchanging data with other universities.

Another pedagogical challenge focuses on making knowledge flow a more reciprocal process, for example between students and tutors, where students' ratings of books can be fed back to tutors, opening up new dialogues, or between students and library staff.

Technically, there are challenges to developing the 'immediacy' of the resource. In addition to encouraging students to use the ratings and comments feature, Mr Pattern considers that point-of-use feedback may be more readily obtained if technology could be installed in the automated sorting machine, which asks students, “Did you find this book useful: yes/no?”.

## Wider adoption

Of relevance is the 2008 JISC project 'Towards Implementation of Library 2.0 and the e-Framework' (TILE). TILE advocates closer collaboration in the higher

education community for the purpose of developing a resource, based on 'concentrated intelligence about user behaviour'. Through his involvement with the Huddersfield system, Mr Pattern believes the project could be enlarged to include other higher education institutions. Universities could contribute their loan transaction data to a UK-wide aggregation service, so that a picture of what is being borrowed across the country could be developed.

## **Glossy project on mobile learning – Gloucester College**

Harnessing Technology system outcomes:

- Enabling infrastructure and processes
- Engaged and empowered learners.

<http://www.gloscol.ac.uk>

<http://glossymolenet.wordpress.com>

The aim of the Glossy project was to enable learners at Gloucestershire College to access learning at a time and place to suit them, through use of mobile technologies. Mobile technologies were integrated into learning activities, in order to improve retention and achievement.

### **Innovation**

The infrastructure provided by the Glossy project has enabled a more integrated use of mobile technologies for educational activities at Gloucestershire College. Two particular objectives of the project were to ensure that personally owned devices as well as college technologies were supported for learning, and secondly to provide an opportunity for staff and students to experiment with using different mobile devices to enrich learning.

### **Background**

Gloucestershire College prides itself on being an early adopter of technology for learning: every teaching space has an interactive whiteboard and internet access, and the college's virtual learning environment (VLE) is well developed, with a central role in the life of the college. The college was keen to exploit recent advances in mobile technology and the fact that a large proportion of staff and students now own personal mobile devices.

In November 2007, James Clay, the ILT and Learning Resources Manager, initiated the Glossy project – a Mobile Learning Network (MoLeNET) project funded by the Learning and Skills Council and managed by the Learning and Skills Network. The project ran until July 2008 and was carried out in partnership with the National Star College. The two colleges worked closely together, although each pursued distinct goals.

The core aim of the Glossy project was to enable learners to access any time any place learning using content that could be retrieved, modified or created using personal devices.

The college recognised that the infrastructure put in place by the Glossy project was only the beginning and there would also need to be a change to the culture and pedagogy to capitalise on this medium for learning.

## **Technology**

An additional student wireless network was installed to enable learners and staff with Wi-Fi-capable devices to connect to the internet.

The college library's computers have Bluetooth, DVD burners and memory card readers installed so that learners can transfer digital content to other platforms, including less portable devices they may have at home, such as games consoles and DVD players.

The college also invested in different types of mobile device that support specific styles of teaching and learning, such as portable games consoles with cameras, netbooks, MP3 and MP4 players, smartphones, MP3 recorders, high definition (HD) and MP4 video cameras. These have been purchased in sufficient numbers to enable full-class participation.

It was important to Gloucestershire College that the infrastructure in the Glossy project was sustainable, and so efforts were made to choose future-proof technologies.

## **Teaching and learning**

Because the Glossy project has invested in a broad range of devices, both learners and tutors have been able to experiment and find the most appropriate technology for each situation. In particular, there has been an increased use of video and audio in learning activities, for example sports studies students use handheld games consoles with cameras to record sporting techniques for learning. As the consoles have larger screens than most digital camcorders, the students can review their sporting techniques while still in the field. Later on, the students can transfer the material into their learning assignments and presentations.

“Glossy for me was kick-starting a cultural change in the college. We have embedded the technology and the infrastructure into the building and our teaching; we now need to embed it in learning, and that's what we're now in the process of transforming by moving on and building on the work of Glossy.”

[James Clay, ILT and Learning Resources Manager]

## **Impact**

The infrastructure implemented by the Glossy project has been vital for the uptake of learning using mobile technologies, which are becoming an instinctive and seamless

part of teaching for many staff. The college is now considering the potential of the devices in other areas such as formal assessment and administration.

Mobile technologies tend to have kudos among the students. Learners who need to record lessons and review them at their own pace because of issues such as learning difficulties or a limited understanding of English can now use technologies that the whole class uses, rather than requiring assistance that singles them out as having special needs. Further, offering mobile devices to students who have previously been excluded from education for behavioural reasons has helped to build the students' self-esteem and has improved the trust relationship with their tutors.

## **Challenges**

Wireless network security has needed careful consideration, and the college is working closely with the system supplier to ensure a secure and safe system. Network access on the wireless network is available only to authorised and authenticated users.

Devices also need to be stored safely when students are not using them, for instance when students are in a sports session.

The roll-out of services to such a large number of users has led to a step change in demand for college IT support services, for instance students needing to charge their devices when in college.

## **Wider adoption**

Gloucestershire College's willingness to experiment by adopting new technologies and pioneering their role in learning has been key to the success of the project. There has been enthusiastic support for the project from the principal, senior management, IT Services department, middle managers, practitioners and, importantly, the learners.

"Within the college, it's important to get the culture and message of the project right. If another college were to replicate Glossy, I'd advise them to focus on the learner experience, why are we doing this, what would make the learners' life and learning easier and more relevant and engaging."

[Mr Clay]

## **InLiving – Kirklees Neighbourhood Housing**

Harnessing Technology system outcomes:

- Engaged and empowered learners.

<http://www.inliving.co.uk>

Kirklees Neighbourhood Housing's furnished tenancy scheme offers a high level of support for vulnerable people aged 16–25 taking on a tenancy after homelessness. The offer now includes the use of a purpose-designed mobile phone game.

### **Innovation**

Kirklees Neighbourhood Housing uses a mobile phone game, InLiving, as part of a package aimed at equipping vulnerable young people with the skills needed for independent living. The game has been developed in consultation with young people and illustrates the innovative use of a game for informal learning, accessed through a technology that is already integral to the young people's lives.

### **Background**

Many of the young people in the furnished tenancy scheme have experienced a problematic family life, often with periods in care. In addition, many have complex social and educational needs, allowing little opportunity to acquire the competencies associated with independent living, such as budgeting, personal care and interpersonal skills. The lack of these skills makes this group especially vulnerable to tenancy failure, with rent arrears and antisocial behaviour being particularly prevalent.

Kirklees Neighbourhood Housing previously offered courses to this group of tenants to help teach the necessary skills; however, engagement was low. In 2007, Susan Greenwood and Karen Batty, the Young People's Support Managers at Kirklees Neighbourhood Housing, in conjunction with Phil Mundy and Anton Iacono from Creative North, jointly funded and developed a mobile phone game to simulate independent living. To ensure the game was effective at tackling relevant issues in a stimulating way, feedback was sought from a range of young people throughout the development and roll-out of the game, including from people already on the furnished tenancy scheme, young people excluded from formal education, Year 11 students and students from a Madressah Islamic school.

### **Technology**

The game is played on a user's personal mobile phone. The game is downloaded to a phone either by texting a request which returns a link to download, or the game is

delivered via Bluetooth from laptops at places such as housing organisations and schools.

There is no charge to download and play the game, which is critical for the target group, as many are often without phone credit.

A web-based version of the game is being developed after requests from schools and children's homes.

## Teaching and learning

In the game's virtual environment, users take the role of a character and guide their character through his/her daily life, making decisions in scenarios that simulate real-life situations such as finding work, budgeting and dealing with other people. Mrs Batty reports that most people in the target group are motivated to play the game and are willing to explore different options within it.

As many of the client group both lack life skills knowledge and have low self-esteem, it is thought to be important that scenarios can be rehearsed in private with no consequences outside the game. Further, delivering the game to the user's mobile phone allows 'any time, any place' access.

The tenants have regular visits from Kirklees Neighbourhood Housing staff and can contact them easily between visits. Tenants can discuss issues arising from the game and relate the game to real life.

"If someone sits down and tells one of our young people about eating healthily, paying bills, etc, they're not going to take it in – they're just going to turn off. InLiving gives you some credibility: all of a sudden you're not there as an official saying 'read this, do that,' and the young people start asking the questions."

[Mrs Batty, Young People's Support Manager]

The game is now being promoted in citizenship classes in schools and in care homes.

## Impact

In the first few months during which the game was integrated into the support package, successful tenancies increased by 10 per cent; at the time of writing, only three of the 94 furnished tenancies were struggling. Although Kirklees Neighbourhood Housing believes that the game has contributed to this improvement.

One noticeable impact has been in the enthusiasm and general engagement of the young people using the game, many of whom have reported that the game has increased their knowledge of independent living.

“It made me aware that you have to get yourself up and other things.”

[InLiving user]

“It is very expensive to have your own place.”

[InLiving user]

In December 2008, six months after the game’s release, 600–700 games had been downloaded. This is in addition to those delivered through Bluetooth by schools, care teams, housing associations and other agencies.

## **Challenges**

Ms Greenwood and Mrs Batty believe that the game should be free. Further, they wanted the young people to be able to download the game instantly when they received the text number. In the first few months, the telephone operators charged for the download, with tariffs typically being 10–50p, but now Creative North has been accepted onto a pilot scheme in which it is charged with no cost to the user.

Due to security issues, the machines that provided the games via Bluetooth could not be part of the council network. To overcome this, the council provided free decommissioned laptops, which can be moved around to deliver wireless downloads.

## **Wider adoption**

Mrs Batty stresses that the game must form part of a wider support package.

The game has received wide interest from outside Kirklees, and is being adapted for different target groups and in other areas such as for university students, the NHS and the police.

Ms Iacono warns that a key factor to ensure success is the promotion and marketing of the game. She stresses the need for organisations to seek feedback and for the continual development of the game to ensure its effectiveness in promoting relevant skills.

## Laureate – University of Liverpool

Harnessing Technology system outcomes:

- Technology confident effective providers
- Enabling infrastructure and processes.

<http://www.laureate-inc.com/univOLSummary.php?reclD=16&pageType=overview>

Laureate at Liverpool University offers a wholly online, relatively large-scale example of online postgraduate degree programmes.

### Innovation

Postgraduate degree programmes at Liverpool University are delivered wholly online. The target group is people employed in a professional role who would find it difficult to do a Master's degree full time.

It is thought that the Liverpool initiative differs from other online courses in that there are no restrictions, for example students do not have to make day release arrangements or be near the university.

Laureate is also thought to be on a different scale from other initiatives. From an initial 17 students doing the IT degree in 2000, in 2009 there were 4,000 enrolled and active students on an expanding programme, which it is expected will accommodate between 10,000 and 20,000 over the next few years. A total of 2,545 students completed programmes successfully between 2003 and 2008.

### Background

Liverpool University has offered online postgraduate programmes since April 2000. The initiative evolved from an online IT course developed in conjunction with an Israel-based company in 1998–99, to the current partnership with an international training organisation, Laureate. Laureate operates out of Amsterdam, with headquarters in Baltimore, USA.

The courses available at Liverpool range from business administration to computer science and public health.

The university is responsible for all academic programmes and the awarding of degrees. Laureate deals with the operational issues, including the hiring and deployment of tutors, subject to the university's approval.

The initiative was developed to offer an online qualification: a dissertation-based Master's course of the same standard as the campus-based degrees. For each course, eight modules are taught over eight weeks in a virtual classroom of around 20 students, followed by the dissertation phase. Students register online and are

placed in a class with an instructor. The instructor is engaged and paid for by Laureate, having been approved by the university.

## **Technology**

A Blackboard VLE replaced previous technology, including FirstClass. The only technology that students need is a PC with an internet connection.

The course is delivered entirely online, from registration to participation in groups, interaction with instructors, assignments, feedback and assessment.

## **Teaching and learning**

The online programme offers the same qualification as the campus-based programmes, with the same requirement for students to write a dissertation.

According to Professor Paul Leng of the Computer Sciences faculty, the online learning is designed to be “very immediate, very discussion based, high tech and very tightly scheduled – much more so than, for example, the Open University”.

Students study modules within a fairly rigid framework. Every Thursday, course materials – which can be in different media but are mainly text based – are placed in electronic folders for students. Over the following week, students hand assignments to instructors to mark, and receive feedback within three or four days of the week’s end. There is very little flexibility to the structure, but this is seen to be one of its strengths. Students cannot realistically take more than one week off. Any absences are quickly identified, and problems followed up.

Central to the programme is the discussion group, including peer evaluation. Online group discussion is embedded in the learning experience. Students are encouraged to assess each other’s work. Students find this exchange of ideas particularly valuable: it helps them gain perspectives from others who may work in very different industries or come from different international backgrounds.

Another feature of the programme is online week-by-week assessment by an instructor. The instructor is monitored by a university academic, who has continuous, free access to all coursework and individual and group contributions, as well as to marks awarded and instructor feedback. Assessment criteria for instructors are clear and explicit. Marks are also awarded for participation, and students are graded ‘outstanding’, ‘good’, ‘marginal’ or ‘fail’. It was thought that a finer-grade system, different from that used for the campus-based programmes, would cause moderating difficulties.

“Some students would prefer a system that would include more detailed ranking, for example a GPA [grade point average] as in the USA, but the culture of the virtual

classroom is collaborative rather than competitive.”  
[Professor Leng]

The recommended completion time is four years, although there is some flexibility: students may take up to six years. Student support managers at Laureate encourage students to maintain a good learning pace.

## **Impact**

In terms of outcomes, Professor Leng stresses that direct comparisons cannot be made with the campus-model postgraduate degree courses, because the online course is a different venture.

As is usual for courses, the university’s board of studies receives twice-yearly end-of-module reports, a process which picks up any key issues or problems.

Most students complete the course and many, including those based outside the UK, attend the degree-awarding ceremonies.

“Although the course is more demanding than anticipated, they [students] enjoy the challenge.”  
[Professor Leng]

The perceived impact on students’ working life is that, although study has to be fitted in around working hours, students are highly motivated to complete the course.

## **Challenges**

There is a recognised tension between commercial and academic pressures.

“Laureate has a clear motivation to recruit more students and teach more cheaply, but the university has its reputation to maintain for small classes and high quality teaching.”  
[Professor Leng]

## **Wider adoption**

In three to five years, the postgraduate programme is likely to have expanded to include other subject areas, some of which already operate in a highly competitive field.

The programme is less likely to be adopted in the early years of undergraduate programmes or in further education, not necessarily because of different assessment procedures, but because the online discussion element of the course requires levels of participation that less mature students may find difficult. Instead of a full online undergraduate programme emerging, Professor Leng envisages that a ‘sandwich’

mode of learning may develop, with the first year of the course completed on campus, and the rest while working in a company.

It is recognised that the online learning tools which enable new modes of learning are only part of the picture: the pedagogic framework is much more scheduled and discussion oriented than in most online postgraduate programmes.

“It’s not about the technology; it’s the pedagogy which is the key.”

## **PlymKids e-safety project – South West Grid for Learning**

Harnessing Technology system outcomes:

- Engaged and empowered learners.

Ken Corish, Education Adviser (ICT) at Plymouth City Council, and colleagues David Wright and Karl Hopwood at SWGfL, together with Plymouth Children's and Young People's Trust, worked in partnership with PlymKids drama group to develop a new resource on e-safety.

### **Innovation**

The PlymKids project exemplifies innovative practice in promoting internet safety through performance and mixed media. It illustrates a trend towards encouraging young people to critically evaluate their use of the internet and to share their experiences and concerns with peers and younger pupils through role-play and dramatic scenarios.

### **Background**

The initiative was in response to a perception that e-safety advice can fail to engage young people's interest, partly because of the way it is presented:

“How come e-safety is always taught by old blokes?”  
[Pupil, Key Stage 3]

The project used technologies to capture scenarios in accessible and relevant forms, using video and audio clips and film. PlymKids presented realistic scenarios in an 11-minute performance, filmed on location, and developed into a video and audio resource. A main objective was to portray young people's feelings, emotions and advice to other young people about handling situations that may get out of control, for example inappropriate photos or personal details on social networking sites, or behaviours that could cause potential damage or distress.

Project participants were members of PlymKids drama group, pupils, teachers and a professional film crew. The audience was an SWGfL conference and subsequently schools, youth and community groups.

The project sought advice from IYAC, the Youth Panel for e-safety, and considered Shirley Atkinson's e-safety ambassadors work at the University of Plymouth. Other projects, for example Digizen Cyberbullying Resources, were looked at. The need for a set of resources that could be developed upon and would look at some contentious issues not addressed in conventional e-safety resources prompted Mr Corish to think about using performance and mixed media.

Mr Corish observed that, “guidelines for human behaviour are hard to do”. Role-play and performance help young people to think about issues that affect them, by constructing real-life scenarios.

## **Technology**

Live performance was captured on film and developed as an open video resource, both for didactic purposes (notes, lesson plans) and as a stimulus for further work. Pupils used a variety of media to develop their own e-safety scenarios. An example was demonstrated using Story Creator.

“Pupils think up a scenario and choose images and text to illustrate it. Alternatively, they use Story Creator images as a ‘trigger to generate ideas’. The aim of the exercise is for pupils to put together their own performance to convey their e-safety message to peers and younger peers.”

[Mr Corish]

## **Teaching and learning**

The materials in the resource are designed to be reorganised, adapted and to form part of a mash-up, as well as being used as provided and adapted across the curriculum, especially in PHSE, literacy, ICT and media and communication.

Pedagogically, the e-safety aspect focused on “understanding the issues, developing resilience and reducing vulnerability”.

“E-safety is moving from blocking and filtering towards self-policing, and indeed challenging some of the behaviours online that young people accept as normal that they would not adopt in the physical world.”

[Mr Corish]

There are organisational challenges regarding how young people use technologies in and out of school. Young people develop strategies to prevent parents and older people from finding out what they are doing, for example. Within the physical environment of a school, there is a duty of care towards pupils. Mr Corish sees the answer as “not to remove the technologies from them... but to help them to question behaviours around technologies”. The pupils’ role among their peers as e-safety ambassadors is crucial. This is supported by research in the UK and the USA (CyberMentors).

## **Impact**

SWGfL has gathered 380 feedback comments on the PlymKids project, many overwhelmingly positive. Criticism that project participants were all girls has been met by a performance featuring boys.

## Challenges

The project team sees one challenge as the longer term sustainability of the project and its capacity to expand. The e-safety team is charged with covering diverse issues and confronting difficult areas, from sexual predation on the internet to encouraging wider responsibility in the home and community.

Another specific challenge is parental involvement and how to 'brand' e-safety sessions:

"Inviting them [parents] to another e-safety evening does not float their boat."  
[Mr Corish]

Getting other sectors on board is equally problematic. The interface between school and outside agencies needs to be addressed.

## Wider adoption

Building on work done in consultation with University College Plymouth, a more imaginative approach to parental engagement is being considered. Some work has been done on creating a series of challenges and questions for parents, emphasising a balance between responsible parenting and over-policing of children, and combining quiz-style formats and humour. One such exercise began by asking "Do you feel that technology has left you behind at the station and it's your children driving the train?"

It is also thought important for other sectors to be involved. Despite that fact that Safeguarding Children Boards are part of every local authority's Every Child Matters strategy, some services are not fully represented. The PlymKids project tries to encourage e-safety wherever young people are and whatever environment they find themselves in.

## Rug Room – City College Norwich

Harnessing Technology system outcomes:

- Improved personalised learning experiences
- Engaged and empowered learners.

<http://www.rugroom.net/information>

The Rug Room is a physical and virtual learning and social space at City College Norwich, for learners with an autistic spectrum disorder (ASD).

### Innovation

The Rug Room exemplifies the integration of different technologies as part of a holistic approach to help meet the particular needs of students with ASDs. In the Rug Room, technologies are used in distinct ways, for example to provide a safe retreat space, for strategic use to help ease some of the stress associated with face-to-face interactions, and to explicitly develop the skills that learners with ASD need to cope with being part of the social world.

### Background

People with ASDs have difficulties in social and communication skills, which affect their ability for flexible thought and behaviour. Consequently, college life can be stressful, and to thrive it is essential that students have both appropriate support and a safe physical and emotional space to retreat to.

The Rug Room opened in 2007 to help address these issues. Danusia Latosinski, the Rug Room manager, sought advice from students, staff and external consultants such as Cleveratom, an educational and creative technology company, throughout the design process. The aim was to choose appropriate technologies and design both the physical and virtual space around learners' needs.

The Rug Room was funded by the Learning and Skills Council.

### Technology

In the Rug Room there is an emphasis on creative media; the space is therefore equipped with both Macs and PCs with internet access, digital cameras, digital camcorders, various music technologies, large LED screens and a dedicated TV and radio studio, as well as an editing room.

For social use, there is a gaming area with gaming consoles including a Wii. The Wii has been particularly effective in fostering structured but spontaneous social interaction, by providing a topic of conversation for both players and spectators.

Furthermore, every student has a page on the customised virtual learning environment (VLE) 'rugroom.net', which the students designed in conjunction with the Cleveratom development team. Rugroom.net provides a secure area that is accessed only by members of the Rug Room community. Its main function is social networking and sharing of work through both private chat and participation in various forums initiated and run by the students. Crucially for many students, this type of communication alleviates the stress of much face-to-face interaction, and aids transition between school and college, as prospective students are given personal access, which they can use from home.

## **Teaching and learning**

City College Norwich offers both supported access to mainstream courses and discrete courses specifically designed for people with ASD. Isobel Brewin, who designs the discrete courses and is also a tutor, explains that technologies have a particularly powerful potential for learning in the Rug Room, as her students tend to feel comfortable using technologies due to their predictability, logic and non-interpersonal aspect.

The need to develop students' learning in group interaction skills, as well as to encourage flexibility of thought and the transference of skills, is embedded in the extensive use of creative media. Rug Room staff have worked closely with Cleveratom to devise and deliver appropriate regular creative sessions, which have included photography, animation, film making, music production, 3D interactive programming, 3D design, and radio and TV broadcasting.

All this occurs in a supportive and positive environment. Staff ensure that they have strong relationships beyond timetabled sessions, socialising with students during lunchtimes and arranging many evening events and daytime visits outside college.

## **Impact**

Ms Brewin comments that the use of the creative media in particular has helped her students develop interpersonal skills that are key for independent living and finding and keeping a job. Through confidence gained in the Rug Room, many students have presented creative media work at national conferences and events. However, it is the combination of the secure tailored environment, positive personal relationships and the use of technology that has raised students' self-esteem and view of life.

"In the Rug Room, the students have a chance to build up their self-confidence and their belief in themselves. Their self-esteem just explodes. Parents are amazed at the difference they see in their children. Many are now looking forward into the future in a positive way."

[Ms Brewin]

“The Rug Room has given me a place to feel secure; it gives me a place to make me feel like I’m normal.”

[Rug Room student]

“I like the creativity of it. It helps me to keep in touch with my friends and to show them what I have been doing.”

[Rug Room student]

## **Challenges**

One challenge of running the Rug Room is matching staff to the different needs of each student, and having enough staff who are confident with the many different technologies and applications used.

Another challenge is that, due to the range of specialist technology, the Rug Room falls outside the college’s general IT support. Existing learning support assistants at the Rug Room therefore maintain the website, computers and the radio/TV studio equipment. Although some training has been given, it is sometimes thought that more expertise would be beneficial.

## **Wider adoption**

To replicate the Rug Room’s success in other settings, the vision of using an integrated approach built around relationships in a dedicated space is essential.

All staff need both a clear idea of the skills that they are trying to develop through using technologies, and the frustrations and difficulties that people with ASDs may experience.

Ms Brewin believes that seeking the views of the students and partnering with an outside creative company to explore options in using various technologies and applications has been instrumental in ensuring the relevant and effective use of technology in the Rug Room.

## **Silver Surfers – Ealing City Learning Centre**

Harnessing Technology system outcomes:

- Engaged and empowered learners.

Ealing City Learning Centre provides specialist ICT teaching and learning for schools, teachers and local community groups.

### **Innovation**

The course, for ‘silver surfers’, is a specialised beginners’ and intermediate ICT course to meet the needs of older people in the community. It caters for a wide age range (60–85-plus) and accommodates people with mild to moderate disabilities and different prior learning levels.

### **Background**

In a mixed-age class, the specific learning needs of older people were not being addressed. Older people have specific requirements relating to the pace and style of lessons, the length of lessons and break times, the times of day at which classes are held and the need for more repetition and consolidation of learning. They may also experience difficulties with keyboard skills or manipulating a mouse, or with sight, hearing or mobility.

At the Ealing City Learning Centre silver surfer classes, up to 12 students are taught together once a week during the daytime. Their skill levels are assessed by a tutor. Extra learning support is available for individuals, depending on the level and type of difficulty encountered.

### **Technology**

Standard PCs and keyboards are used. Apart from some adaptive features, the equipment and software is no different from that which is widely used elsewhere.

### **Teaching and learning**

The course aims first to familiarise older people with keyboard and mouse skills, as many have no prior experience, and then with email, the internet, search engines, word processing, graphics and digital images. Learners are recommended to practise between lessons. The course is intended to raise confidence and skill levels in the use of everyday technologies, as well as enabling older people to conduct online transactions such as purchasing, banking and corresponding, or to pursue creative and educational interests.

The beginners’ class is more structured than the intermediate class, where more independent learning is encouraged. For many older users, the ICT vocabulary has

to be learned. The visual language of ICT is taken for granted by younger people, but older people have little prior experience.

Pedagogically, ICT is used to open a gateway to other areas of learning. Through the internet, social and communication skills are also enhanced. An example was given of a student in her 80s who had learned to communicate with her son and grandchildren in Australia using email, photographs and webcam technologies.

Much confidence and independence has come about because the course is organised around the needs of older learners for a secure learning space and peer encouragement. When older people were put with younger learners, tutors noted that if they didn't know how to do something, they asked the younger person to do it for them, instead of having a go themselves.

## **Impact**

Learning how to use ICT raises self-confidence and self-esteem. Staff report that once older people get to the City Learning Centre, they realise that ICT is a tool for making their lives easier in terms of independent living. It enables them to shop online, find out what their entitlements are, research family history and keep in touch with relatives abroad. Some students come as part of an established friendship group.

“You might ask, how is this different from a coffee morning? The advantage of ICT is that it gives much wider access to social networking for a generation who have not been brought up to new forms of communicating.”

[Gina Reeves, Curriculum Consultant and Acting Manager]

Another important impact is that school-resistant adults are enabled through ICT to learn in a different way.

“If your previous learning experience was poor, it inhibits learning. ICT can restore confidence and reawaken an interest in education.”

Teaching and learning with new technologies has led to other interests, such as design, graphics, or photography.

“Older people do not live so much in the virtual world, they want something tangible. They like a product – a card they have designed, for instance.”

The course tutor reported a marked progression rate: the majority of beginners go on to the intermediate course. Some learners expressed interest in other learning, such as digital photography.

## Challenges

Older, susceptible learners are alerted to the possibility of bogus emails or fraud, but are thought less vulnerable than young people to 'predatory aspects' of the internet.

Students who drop out only tend to do so because of health issues. Ninety per cent stay the course, but there is a problem with catching up missed classes, hence the emphasis on between-session practice.

The challenge for some older people is access to a home computer.

"There should be more levelling of access for those over 60, especially those who've retired. If wireless hubs, which are free of charge from home, can be trialled for schools [in a named London borough] this should be more widely rolled out."  
[Ms Reeves]

It is feared that some older people who are not prepared for digital switchover will find themselves excluded. Government policy to deliver more education through home devices may therefore be compromised.

Miniaturisation of technologies has resulted in the loss of a significant market among older people. For people with sight problems, larger-scale mobile phone technologies need to be developed

## Wider adoption

There is limited capacity at the City Learning Centre to run more Silver Surfers sessions. Demand exceeds supply, with a waiting list, but there are barriers to wider adoption.

The question of delivering the course remotely, for example through a VLE, is not under consideration for a number of reasons, including resourcing and support.

Older people who attend know that they have to be able to practise, preferably on their own PCs with internet access. Public access computers or internet cafes are currently inadequate or lack appeal.

## **SMS in undergraduate lectures – University of Nottingham**

Harnessing Technology system outcomes:

- Technology confident effective providers
- Engaged and empowered learners.

Nick Mount is an innovative lecturer in geography at the University of Nottingham. He won the Lord Dearing Award in 2007 for innovative teaching.

### **Innovation**

Students can text questions during lectures, and these are addressed by the lecturer in real time. Similarly, they can text for a glossary of terms: definitions are returned automatically to their phones.

### **Background**

The target group is first-year undergraduate students of geography, commonly comprising over 200 students. A significant proportion of the students' learning takes place in large lecture theatres that are, for many, an intimidating learning space. As such, teacher–learner interaction within the learning space is almost non-existent, with many students lacking the confidence or spoken English skills to express themselves and ask questions during lectures.

Mr Mount first saw the potential of texting at a handheld learning conference at Goldsmiths. Text messaging provides an anonymous way for students to interact with lecturers in real time during face-to-face teaching, thereby breaking down the barriers to learning imposed by the learning space and encouraging teacher–learner interaction. The technology is accessible, ubiquitous and it works.

The system also supports voting, but this has a small delay on it due to differing speeds of mobile providers.

Administration staff also occasionally use text messages to broadcast urgent messages to students, such as details of lecture cancellations.

### **Technology**

Students use their own mobile phones to text questions during lectures, with the lecturer receiving texts via a web-based application that is similar to most webmail services. Students have ready access to text messaging, and most are on contracts, so the cost of sending texts is negligible.

A web provider s a text number together with the web-based application account. Incoming messages are received free of charge, and outgoing messages (for example, glossary responses) are charged at about five pence each.

## Teaching and learning

Mr Mount considers first-year undergraduate learning to be “a broad church”, and learning the content of the syllabus is only one aspect of this.

Text messaging helps students learn how to express themselves using a technology over which they feel a sense of ownership. It encourages students to ask questions, and stimulates other interactions between the lecturer and students. Text messaging does not replace verbal questions and comments from students but broadens the channels of communication open to them.

A key aspect is the way in which students text questions and the lecturer responds verbally to the whole class, which allows immediate feedback during lectures. Mr Mount organises his lectures into blocks of teaching interspersed with five-minute interludes in which he addresses any texts that he has received. In practice, he typically responds to up to eight texts at a time. Mr Mount also starts each lecture by addressing any texts that arrived after the previous lecture.

Mr Mount displays the technical words that are key to the lecture. Students can text a given word to receive an immediate glossary definition.

## Impact

Evaluation centres on usage logs to monitor uptake of the service, and staff–student consultative committees for getting feedback from students. Feedback has been positive. A student representative at the staff–student consultative committee requested that the texting facility be extended across wider modules.

Anecdotal evidence of student uptake of the text messaging system further suggests that students like the system. In the academic year 2007–08, 90 per cent of first year students registered for text messaging, with 96 per cent in 2008–09. Eighteen members of staff access the system (in 2009).

The txttools system allows access to usage statistics. For example, the system tracked key word glossary requests, revealing very high usage. Students have reported they find the glossary useful.

An average of 7.9 inbound messages are received per lecture. The glossary contains 39 terms related to the geographical information science module, and 132 glossary requests were received during the 2007–08 delivery of the module, equating to approximately 13 requests per lecture. One term, particularly high usage (16 requests compared to the 3.4 request average) was flagged to teaching staff to ensure a recap was given in subsequent lectures.

There have been some unanticipated benefits. For example, a student with an undisclosed visual impairment texted that he could not see what was on the board and requested the colours be changed for the following lecture.

## **Challenges**

Initially, Mr Mount invested some time getting to grips with the technology and the vocabulary young people use in text messages.

Mr Mount has received some humorous texts, sometimes poking fun at him; this suits Mr Mount's personality and informal lecturing style, and only one student has ever over-stepped the line. However, a balance has needed to be found between policing the system enough to ensure inappropriate texts are avoided, but not policing it so much that students are put off from using it.

## **Wider adoption**

There are several considerations if the system were to be adopted more widely across the higher education sector:

- Success seems to require an enthusiastic innovator. Mr Mount has been surprised at the level of resistance from some of his colleagues to trying text messaging.
- Text messaging enhances only certain forms of learning in particular contexts, but may detract from learning in other contexts. In particular, text messages are short and therefore suit "the lower end of the learning taxonomy", but would be less well suited to higher-order learning and thinking.
- Not all lecture halls can be equipped for using the system. For example, many departments have basement lecture rooms with no mobile network coverage.
- The culture and rules in higher education generally reject the use of mobile phones for learning.
- There are subscription costs and costs per message sent. While low, these costs compete with other costs for any given department. An investment case therefore needs to be made, although a shift to university-wide adoption via virtual learning environments would reduce the cost per student greatly. Mr Mount sees this as desirable and possible within a five-year horizon.

## Talking Tactile Technology (T3) – The Royal National College for the Blind

Harnessing Technology system outcomes:

- Improved personalised learning experiences
- Engaged and empowered learners.

<http://www.rncb.ac.uk/t3/index.html>

The Royal National College for the Blind (RNC) is a residential specialist college for learners with visual impairments. At the heart of its mission is to prepare these young people for work, higher education and independent living.

T3 is a multi-sensory (audio, visual, tactile) learning system in which the learner uses tactile images to activate instant feedback to explore, comprehend, reinforce and revise almost any chosen curriculum area.

### Innovation

T3 offers a new degree of personalisation for learners with visual impairments, allowing them to learn at their own speed with or without the support of sighted assistants. Tutors can storyboard and, with training, create their own tactile sheets on any given subject.

T3 can also be used by sighted learners, and has been seen to stimulate younger learners and those with special educational needs – particularly those with poor levels of literacy.

### Background

Visually impaired learners are usually excluded from graphical and visual data that enrich the learning experience for sighted learners. Many subject areas at most levels make heavy use of visual representations: the sciences, for example, often rely on diagrams and charts, maps are vital to geography and it is much easier to harness ICT if the user can visualise the screen and file/folder layouts.

In addition to learners with a visual impairment, any learner who has difficulty with the written word is limited in the use of text to support learning.

### Technology

The T3 system comprises a touch screen on which an overlay, imprinted with a tactile image (for example, a diagram of the human body to illustrate the location and functions of the glands) is placed. This pad is connected to a standard PC or laptop via a USB connection. By pressing a unique pattern of three buttons at the top of the sheet, and buttons at two diagonally opposing corners, the learner locates the sheet

in the correct position, calibrates the sheet and activates the information files in the connected PC or laptop. The user launches the system by pressing anywhere on the 'screen' and then explores the overlay sheet through touch. As the users explore the raised contours of the overlay, they are able to identify symbols, icons or tactile regions which, when pressed, trigger pre-programmed audio information (for example, 'the pituitary gland is located at the base of the brain'). Each symbol may contain up to 10 levels of information – each press reveals a new related level of information.

The overlay sheets can be custom made on commission by the RNC Multi-Sensory Communications team (the team work from a storyboard supplied by the commissioning tutor or institution) or by the tutors themselves. The RNC also holds an expanding catalogue of sheets which can be procured at relatively low cost.

## Teaching and learning

T3 is enriching teaching and learning across a wide range of curriculum areas, from alternative therapies to numeracy and literacy, geography to science, religious education to physiology, and, most recently, healthy eating, and all ages from Early Years to Level 3.

The system is straightforward to set up and user friendly once loaded. Learners can work independently or alongside a sighted assistant. T3 can be used by individual learners or in small groups. In some mainstream schools where there is only a single visually impaired learner in a class, T3 has been used by many learners and has been influential in bringing the visually impaired students into class discussions.

Evaluation feedback from teaching staff internally and from external organisations has identified that T3 has particular applications for:

- resourcing supported learning
- revision and assessment
- enhancing listening skills and supporting students to follow verbal instructions
- improving concentration
- topic-based learning
- independent or paired learning
- supporting the fine-tuning of motor skills.

## Impact

The RNC has now worked with over 100 different organisations (schools, colleges, universities, employers) in the UK and Europe over the five-year duration of this initiative. Over 200 units have been supplied, although it is impossible to know precisely how many users are now taking advantage of these. The college has

worked with mainstream schools that originally intended the tablets to be used with individual visually impaired learners but now use them for group and even class teaching. Many of the RNC's partner organisations are specialist institutions for those with learning difficulties and disabilities and/or special educational needs, and procure T3 for use by many learners.

## **Challenges**

In most circumstances, the T3 unit is used only by a single user at any one time. As the initial investment, excluding the computer, is in the region of £900, this may appear prohibitive. However, this figure includes all necessary software and ongoing support from RNC. No additional costs should accrue other than optional training in creating or procuring the overlay sheets. The RNC offers a one-day training course for £400, which covers any reasonable number of trainees (the college encourages participating institutions to support a group of authors rather than a single individual). Custom-made overlay sheets cost in the region of £140, depending on complexity. However, if sheets are treated with care, they can be reused without limitation. It is likely that perceptions of cost are more of a barrier than the actual costs.

The touch pad is somewhat bulky by comparison with many emerging technologies, and this may act as a disincentive to some tutors (if they are required by timetables to move classrooms).

## **Wider adoption**

The T3 has a core constituency of learners with a visual impairment, and there are relatively few barriers to any such learners benefiting (contingent upon other possible disability issues). Cost may, however, be a barrier to personal ownership for most visually impaired learners.

As noted above, T3 has the potential to be used more widely than among learners with visual impairments, and its use is by no means limited to specialist institutions.

## Video conferencing – Finham Park School

Harnessing Technology system outcomes:

- Technology confident effective providers
- Improved personalised learning experiences
- Engaged and empowered learners.

<http://www.finhampark.co.uk/dept/d-math.php>

Finham Park is a popular and successful specialist college for mathematics and computing for students aged 11–18, situated in the south-west of Coventry.

### Innovation

A secondary teacher, Adam Boddison, used video-conferencing technology to deliver distance learning to mathematically able Year 6 pupils in the West Midlands.

### Background

One of Mr Boddison's roles as a secondary mathematics teacher is to work with local primary schools on the transition from Key Stage 2 to 3. As part of this transition work, Mr Boddison offers mathematics enrichment to the the more able students.

The project had three aims:

- To create a community of able mathematicians
- To facilitate independent and personalised learning
- To enhance the Key Stage 2 to 3 transition process.

Six primary schools identified their most able mathematicians in Year 6, and funding for enrichment lessons was made available by the Primary Learning Network (which is centrally funded by the DCSF). Various options were considered, including transporting students by bus to the secondary school, supporting pupils through asynchronous online media such as forums and blogs, and teaching by video conferencing. The latter was chosen as cheaper and logistically simpler than providing transport, but richer and more interactive than asynchronous online media.

The project began in September 2005. Prior to the project, Mr Boddison provided a 20 minute training session to familiarise schools with the technology, and the primary pupils met Mr Boddison and one another at the secondary school to help establish a relationship.

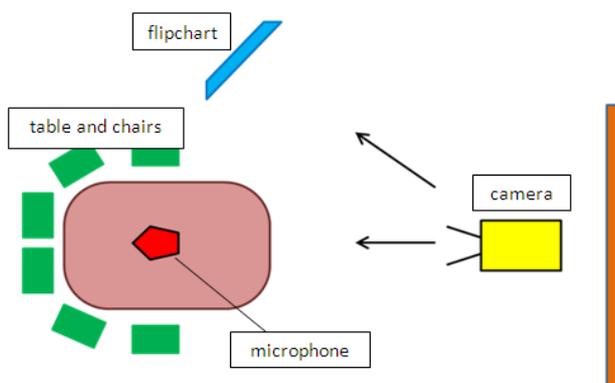
Mr Boddison delivered the video-conference lessons. In all but one of the primary schools, no teacher was present during sessions, although a named individual (usually the headteacher or ICT co-ordinator) was close at hand to deal with

emergencies and technical difficulties. Mr Boddison taught two one-hour lessons per week. Each lesson involved three of the primary schools, with six pupils from each school.

## Technology

Video-conferencing technology was used to deliver the lessons. Each primary classroom was set up as shown below, with two preset positions for the camera.

The teacher's view when delivering lessons is shown below. The larger, top picture in each group shows the school that the teacher is interacting with at that time. The other pictures show the other two schools and the teacher. In addition, a computer



screen could be broadcast so that the students could see, for example, PowerPoint slides rather than the teacher.

## Teaching and learning

The aims of the project centred on enrichment, giving able pupils opportunities to



explore curriculum mathematics more deeply and broadly. Tasks were presented in a more open way than in traditional mathematics classrooms, and pupils' own questions were encouraged and built upon.

The project also sought to ease the transition from Key Stage 2 to Key Stage 3 mathematics by using a secondary mathematics specialist to teach primary school children.

## Impact

The students' overall responses were positive. They reported feeling less bored and more stretched than in their usual mathematics classes. There was also more scope for interacting with others and for hands-on work.

The absence of a teacher in the room (except at one of the schools) promoted independent learning. One student reported:

“It was great. We could do the problems using our own methods and we didn't have to set it out like our teacher normally tells us to.”

[Student user]

Often, however, the students took advantage of the absence of a teacher to share answers with one another, as Mr Boddison discovered through interviews after the session.

Adam did not instruct pupils how to organise themselves when working on activities, but found that pupils naturally worked in pairs or small groups most of the time. Occasional short disagreements broke out among students, usually over technical issues such as positioning the camera, but constructive discussion, not argument, characterised the sessions. In fact, students commonly took responsibility for managing one another's behaviour.

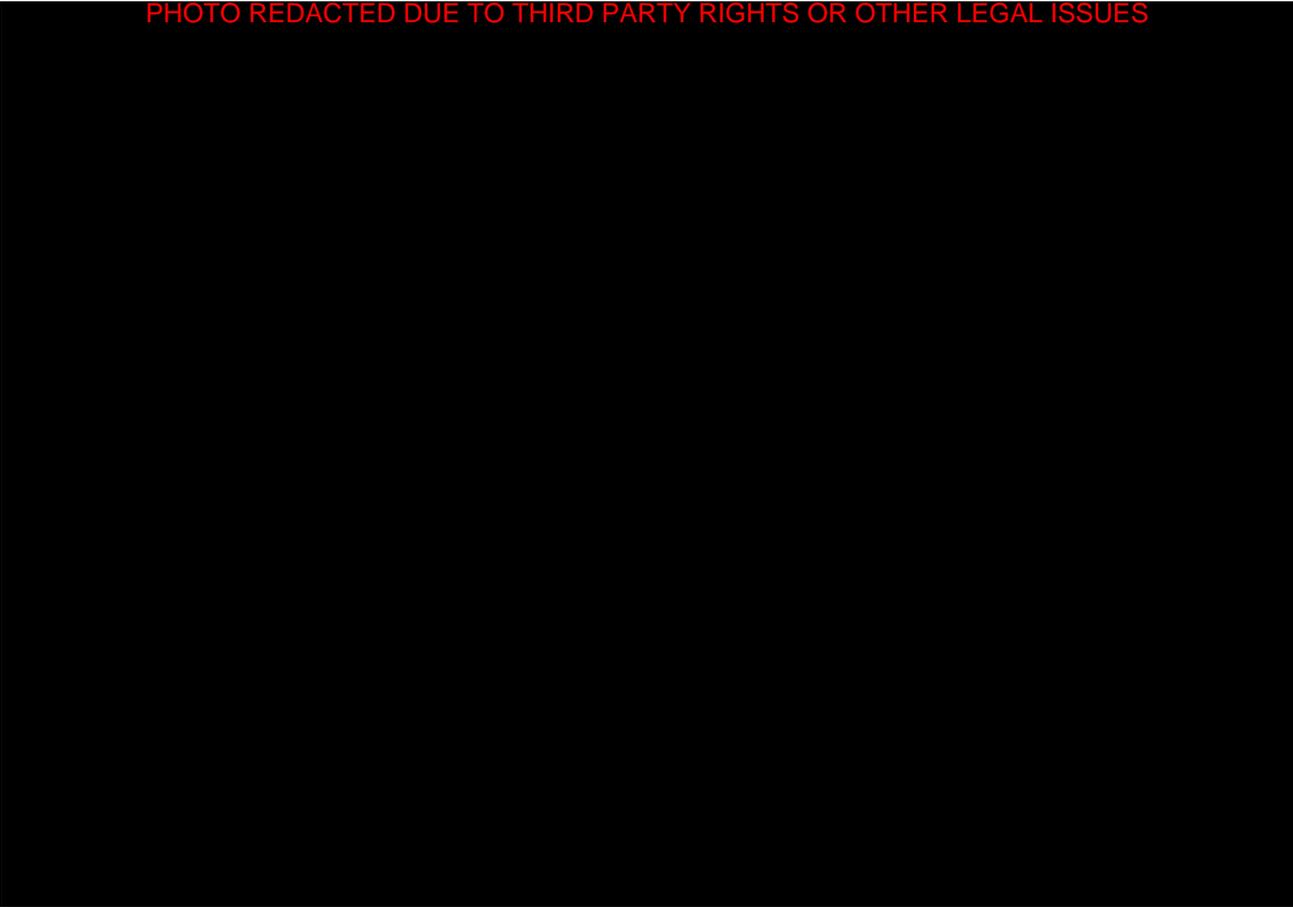
Another aspect of independent learning that emerged was the students' presentation of ideas and thoughts. The need for visualisation over a video link led some pupils to use resources innovatively. One student reported:

“We didn't have the grids or any paper in our box, so we chose to draw one on the computer. When we pointed the camera at the computer screen, it was just all blurry and you couldn't see anything. Then we drew it on the flip chart with a metre stick, but it took ages and it wasn't very accurate.”

[Student user]

There was notable variety in the resources and notation students chose and how they used them. A selection are shown below.

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## Challenges

None of the primary schools had video-conferencing equipment prior to the project, and the cost (approximately £10,000) was greater than expected.

Once installed, the equipment worked adequately for the duration of the project. The signal was at times imperfect, with the picture freezing or becoming fragmented because sound was prioritised when internet traffic was high.

There were some logistical difficulties with co-ordinating all the three schools involved in each lesson. Some pupils had to miss part of their break, or sport and other school activities.

## Wider adoption

The three challenges identified above can be expected to occur if the innovation is adopted more widely, namely:

- A typical primary school is unlikely to have adequate video-conferencing technology or trained staff. For many primary schools, space is at a premium, and it may also be a challenge to find a spare room.

- Many schools, including primary schools, have only a domestic broadband connection. As such, the infrastructure is not good enough for the innovation to be rolled out.
- There is no national timetabling within primary schools, and the logistics of synchronising lessons across sites may be difficult. Compromises are likely to be necessary, as was the case with the project reported here.

## **Whole-school creative digital media – St Helen’s Catholic Primary School**

Harnessing Technology system outcomes:

Engaged and empowered learners

- Enabling infrastructure and processes.

<http://www.sthelenslive.net>

St Helen’s Catholic Primary School has 150 pupils in an area of Barnsley, South Yorkshire, described by Ofsted as having social and economic disadvantage. The school has used digital media to drive creativity in the curriculum and whole-school change.

### **Innovation**

St Helen’s school integrates creative digital media in everyday teaching across the curriculum to target the development of the children’s speaking and listening skills. This approach has been made sustainable by an emphasis on ensuring that staff are appropriately skilled and confident with the technology, and that assistance is readily available.

Further, resourceful timetabling ensures high support for both staff and children during digital media projects. The children can work in smaller adult-supported groups, and are encouraged to be active in negotiating the nature and direction of their work. Crucially for listening and speaking skills, the children’s work is created for an audience outside the classroom by the work being regularly exhibited on the school website or sent home on a DVD.

### **Background**

In 2002, Phil Harrison, Headteacher at St Helen’s, joined the Creative Partnerships programme, a national initiative to foster the development of creativity in schools by partnering with creative practitioners. The aim at St Helen’s was to equip the school to use creative media specifically to support the children’s speaking and language skills. The programme ran, not always smoothly, for six years, and included outside agencies coming into school to work directly with the children and to train staff. Towards the end of the programme, St Helen’s forged close links with its local city learning centre in order to sustain activity after the funding support for work with creative practitioners was withdrawn.

In September 2007, Mr Harrison appointed a higher level teacher assistant, Melanie Fisher, who has great enthusiasm and skills in media work, as the school’s media co-ordinator. Ms Fisher has a clear understanding of both ICT and the Primary

Framework for Literacy, and is able to provide first-hand support for teachers in incorporating digital media as an integral part of their planning and teaching.

## **Technology**

During the Creative Partnerships programme, the school converted a resource store into a TV and film-making studio which houses professional cameras and editing equipment, and allows blue screen filming. In addition, every classroom is equipped with an interactive whiteboard, between three and nine desktop computers, a digital camera and an audio recorder.

The main creative media projects cover animation, live-action film making and digital imagery. The children use a variety of software, with the most popular media applications being Photoshop, Crazy Talk and Comic Life. The resulting work is often showcased on the school website; the children keep the website up to date with work specifically designed to communicate home–school information creatively.

## **Teaching and learning**

Ms Fisher notes how work with creative digital media lends itself to the children naturally evaluating their work. In particular, children notice how effectively they communicate, and spontaneously offer suggestions for improvement.

“When children see their work, immediately they are evaluating it, saying ‘we should have done this’, ‘next time we’ll do that’. They only have to see it once and they know what they want to do to put it right, whereas if you just tell them they don’t always understand.”

[Ms Fisher]

Some of the work requires patience in quite repetitive tasks and a high degree of consolidation of skills; some children who struggle in other areas of the curriculum are empowered by this. Thus the teacher is able to sensitively ensure that these children have the opportunity to take a lead in these areas.

## **Impact**

In 2008, an Ofsted inspector stated: “In all my 100 inspections I have never seen work of such quality that underpins so much of the school’s work in literacy. It, undoubtedly, is affecting standards and achievement across the curriculum.”

Although wary of using SATs results as a measure of success, Mr Harrison observes how the number of children achieving a level 5 in their English Key Stage 2 SATs has significantly increased since the introduction of the creative media work. However, he also comments that the most significant impact has been on the children’s self-confidence, collaborative and planning skills, social skills and

enthusiasm for learning. This is apparent when talking to the children about their work. Comments from the children include:

“It was fun just working together and planning it and making the animation, and when we watched it at the end, it was really good and made me feel really proud.”

[Year 6 pupil]

“I liked doing the camera, taking photos, it was cool. The best bit is putting the stuff around the photos on the computer. We put some blue fishes around our photo.”

[Year 1 pupil]

The work has not only inspired the children, but has had a dramatic effect on the IT skills of the staff, with many pursuing their interests and developing their competences out of school. For example, six of the school’s 10 teaching assistants are currently enrolled on an NVQ Level 4 ICT course in their own time, independent from the school’s continuing professional development programme.

## **Challenges**

One ongoing challenge is to maintain the equipment. The school’s media co-ordinator is technically very skilled and so is able to carry out some of this herself; however, outside support can be financially costly.

The school appreciates that it must obtain parents’ permission for children to be videoed and photographed. In St Helen’s, nearly all parents and carers have given such permission; however, as this can be central part to some of the projects, the staff need to be sensitive to individual children feeling excluded or discriminated against if permission is not granted.

## **Wider adoption**

If a school wanted to adopt this approach, St Helen’s recommends linking to other schools already using digital media and seeking support from their local city learning centre. In addition, Mr Harrison attributes the key to St Helen’s success and the sustainability of the work to ensuring all staff had enough training and support to feel confident. The commitment of the staff, particularly the headteacher, has been instrumental in driving the projects and planning for sustainability, which included the appointment of a media co-ordinator, freed from other classroom responsibilities, who is on site and accessible for support.

## **Wigan Online – Wigan Council**

Harnessing Technology system outcomes:

- Technology confident effective providers
- Improved personalised learning experiences
- Engaged and empowered learners.

<http://www.wigan.gov.uk/Services/EducationLearning/AlternativeEducation/WiganOnlineLearning.htm>

Wigan Online Learning (WOL) aims to provide a positive educational experience for approximately 60 Year 10 and 11 students regarded as disaffected by or excluded from other forms of education.

### **Innovation**

WOL exemplifies the personalisation of learning, which is achieved through a balance of online provision and face-to-face tutoring, and through the innovative use of multi-agency working. Different elements of the provision are designed by tutors and other professionals such as drugs and alcohol awareness workers. Selected elements are then integrated to meet the unique needs of particular learners.

The programme offers continuity of provision, allowing students to continue if, for instance, they move out of the borough.

### **Background**

In 2005, Rob Jones, the current WOL manager, created a flexible educational programme specifically aimed at disaffected and disengaged students.

Mr Jones was aware that many disaffected young people have experienced negative and often antagonistic relationships with both staff at school and adults more generally. Disengagement from education is often the result of a complex combination of factors. For students to benefit from the support offered by non-educational specialist services, trust, engagement and straightforward access were needed. Thus Mr Jones developed WOL, which was adopted by Wigan in 2006.

The approach taken by Mr Jones anchors online learning in a relationship between personal tutor and student which is sensitively fostered through both online and face-to-face support. Education is integrated with other local services also working with young people, such as Connexions and relationship and sexual health support.

### **Technology**

Each learner is provided with a home computer and broadband access for their time with WOL. WOL is currently exploring the universal use of 3G cards for student

internet access. 3G cards are both portable and cheaper and faster to install than fixed-line internet access.

Tutors use Macromedia Breeze to provide both banked and live interactive lessons. The First Class Ed platform allows 24-hour access to over 1,500 activities, including learning tasks, advice and chat rooms within the WOL community. Critically for these students, First Class provides a non-threatening space for learning, discussion and relationship building. Anonymity makes it easier for students to seek advice on more sensitive issues. Staff regularly monitor conferences outside school hours and intervene if a crisis occurs.

## **Teaching and learning**

WOL has an individual timetables and a learner-interest-led curriculum. Learners negotiate their own programmes of study with WOL staff. For some learners, the main aim may be to re-engage in education; for others, the aim may extend to taking GCSEs and completing work placements. No elements of the curriculum are compulsory, although many learners request tuition in mathematics and English. Learners have access to a wide range of subjects; WOL will consider extending its curriculum to any topic that interests a particular student.

Most learning occurs online at home and is supported online by a personal tutor. Online support is integrated with a comprehensive range of individual and group face-to-face support, such as weekly home visits, drop-in sessions, and sports and activity days. Most home learning occurs outside normal school hours, with 11:00am to 1:30pm and 7:00 to 11:30pm being the busiest times.

The weekly tutor home visits provide an opportunity for parents and carers to become more involved in the students' education than is normally afforded by mainstream school. WOL is exploring how best to encourage parents and carers to work alongside students towards Edexcel qualifications.

## **Impact**

"It's helped me gain confidence and provided me with the chance to sit GCSEs, which a year ago I did not think would be possible."  
[WOL student]

Three-quarters of students are actively engaged in AQA units; eight GSCE entries were made in 2007. All work that shows evidence of a completed learning gain is assessed by a panel and recognised by internal certificates.

In 2008, all 40 Year 11 leavers secured extended work placements, employment or college places.

In an evaluation in 2007, tutors reported that since joining the programme, over 90 per cent of WOL students had made 'some' or 'definite' progress in the areas of ICT skills, literacy and collaboration skills. However, the most significant areas of improvement were social skills, relationships with WOL staff, and confidence and self-esteem.

"I used to kick off with all teachers; I don't now."

"(I) think I get on better with people now, specially (sic) adults."

[WOL students]

Notably the rebuilding of trust in adults can be seen in the almost complete absence of conflict with tutors. The evaluation notes that, of the 12,000 mails posted by the young people to their tutors in 2006-07, there were only five incidents of offensive language or verbal bullying and no incidents of offensive or inappropriate images.

## Challenges

WOL relies on the competence and flexibility of its systems administrator. The systems administrator has a key role, as students quickly become disaffected if the technology fails.

The annual cost of running WOL is approximately £4,000 per student. Mr Jones has fostered the confidence of referring schools; this relationship not only allows students to bring their average-pupil-weighted units to the initiative, but also the schools collectively contribute an additional £100,000 a year to support the service. Despite this, WOL runs on a tight budget. The budget is particularly challenging because students with more diverse needs are referred to the programme, and so WOL continually needs to adapt its provision to cater for additional requirements.

## Wider adoption

Mr Jones praises Wigan local authority for allowing WOL the autonomy and flexibility to evolve around the needs of the young people it seeks to engage. WOL has attracted attention from a large number of other local authorities, therefore Wigan local authority is investigating the most appropriate way in which it can offer support and advice so that the success of WOL can be replicated elsewhere.